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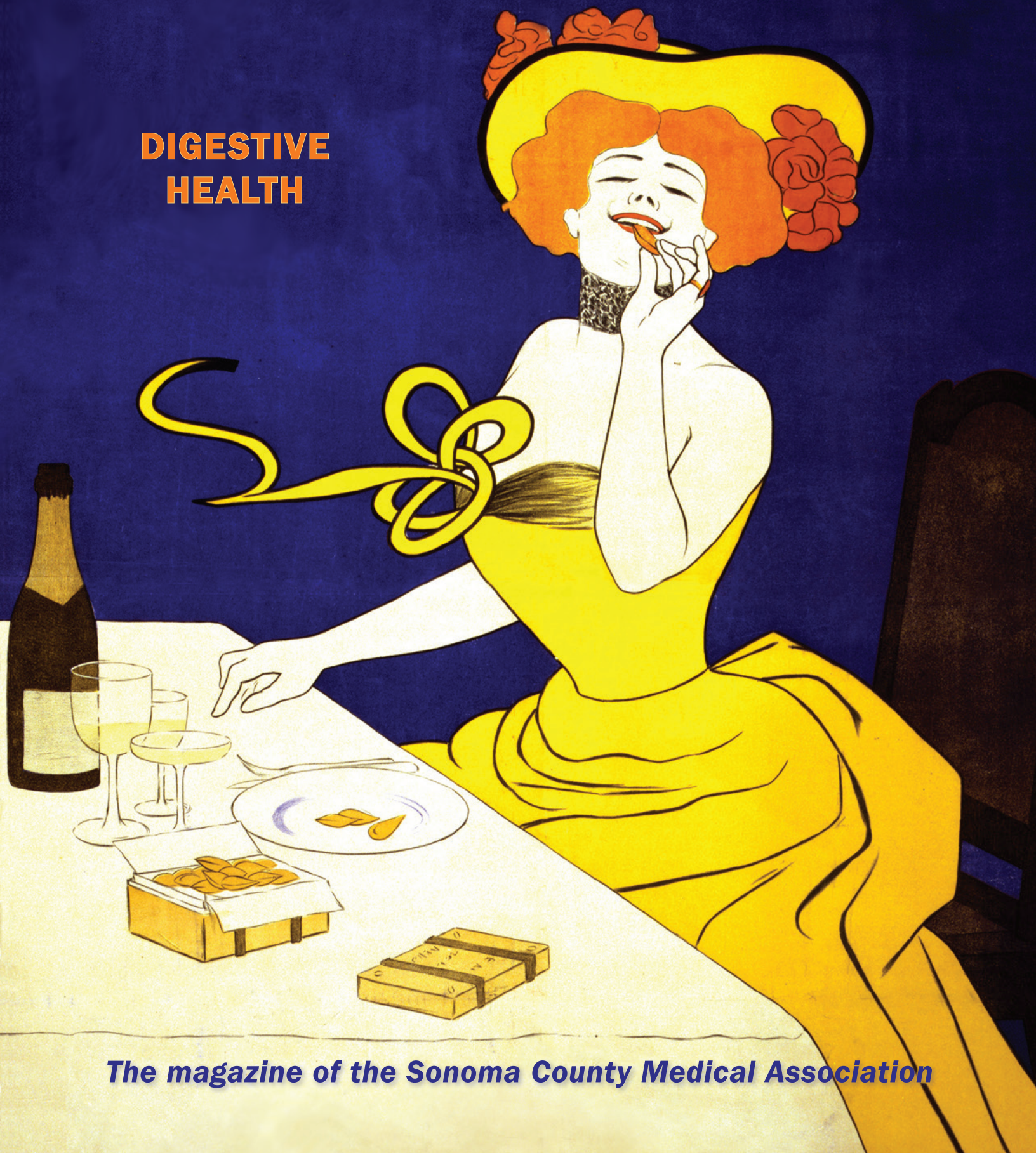
DIGESTIVE HEALTH



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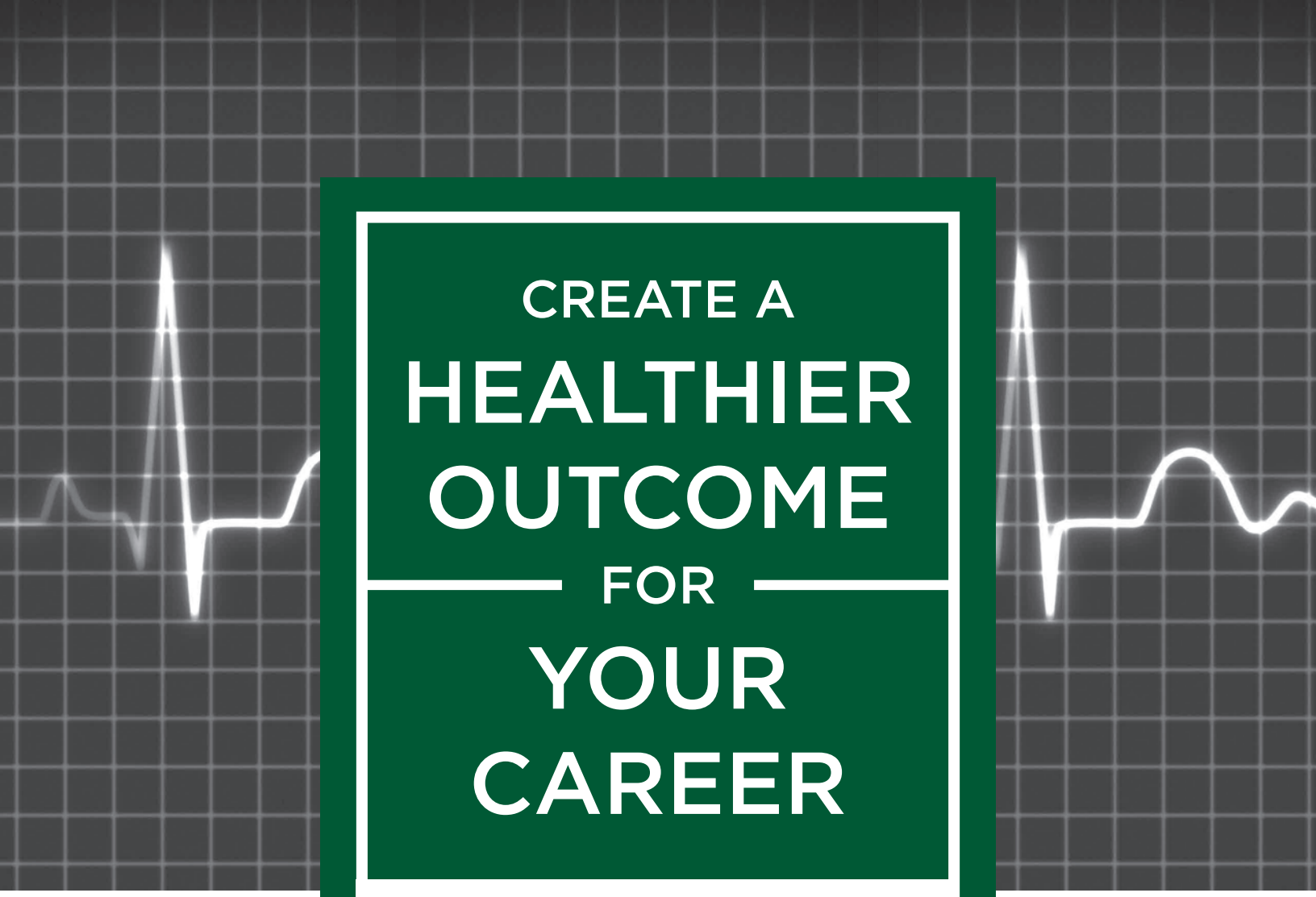

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Down the Rabbit Hole

James Devore, MD

This edition of *Sonoma Medicine* examines digestive health. Oh please, I know your first reaction: why would you devote an entire magazine to indigestion, constipation, flatulence and all the other disgusting functions of the GI tract? But not so fast. There are fascinating new developments in this field that are well worth our time. And besides, this might be fun!

As a way of exploring this topic, let's do a bit of spelunking and plunge right into a tour of your GI tract. Our tour guide will be your friendly but quirky gastroenterologist. (Hey, if you think about it, anyone who goes into *that* field must be quirky!) Our GI doc will of course use his or her trusty endoscope to show us the way. With all its dials and controls and bells and whistles, this is their essential tool—they never leave home without it.

We begin with a flick and a twist (and a gag), and the scope slips easily into your esophagus. Moments later we reach our first "scenic viewpoint." As the scope enters your lower esophagus, the mucosa undergoes a vivid color change from salmon pink to deep red: we have found our passageway to the stomach. This "Cumberland Gap" of your digestive tract is the all-important lower esophageal sphincter! Well, maybe it's not Daniel Boone-worthy, but we do pause to note that this is where acid reflux happens. Why has GERD become so incredibly common? We'll find out more in an illuminating article by Drs. Sarah Murphy and Hana Grobel. But for now we continue onward. Westward ho!

Dr. Devore, a Santa Rosa family physician, serves on the SCMA Editorial Board.

There's excitement in the air! Our journey has taken us across the barren landscape of the stomach (lots of folds, not much to see), through the pylorus (didn't live up to the hype), and we are now looking for where two vital structures converge in the duodenum. This celebrated location is nothing less than the cradle of civilization where the Tigris and . . . never mind, that is a different landmark. But look! There is where the pancreatic duct and the common bile duct come together and open into the gut—the ampulla of Vater! We can relax: this is not the *African Queen,* and there will be no attempt to navigate the treacherously narrow channel that leads to the liver. But we do pause to consider Dr. Stephen Steady's epitome on current treatments for liver disease.

We've now stopped in another area of the duodenum that seems devoid of any special features—just fold after fold in an endless sea of patterned regularity. Why stop here, you ask? What's so special about this place? Aha! Just like a tract of desert near Roswell, New Mexico, or perhaps a patch of ocean in the Bermuda Triangle, this unassuming location represents mystery and strangeness and yes, controversy. We are here to do a biopsy for celiac disease. How is it that a disease that just a few decades ago was considered rare and mostly irrelevant can now be so prevalent that whole aisles at the grocery store are dedicated to its treatment? We'll learn more about how gluten and other foods affect our health in articles by Dr. Kenneth Kurtz and Dr. Amy Burkhart.

Enough of the upper digestive tract—it's time to go "Shackleton." We have swapped our endoscope for a colonoscope and have begun exploring your "South Pole." (Hey, no one can resist a joke about colonoscopy!) Our captain is now deftly maneuvering around bend after bend as he or she works deeper into your colon. Whoa! What's that? There's a massive avalanche of folds collapsing around the scope as the bowel goes into spasm. Your witty dog-loving nurse quips, "It looks like we're being attacked by a Shar-Pei!" A toggle flick pumps a bit of air, the lumen opens back up, and we move on. Our mission now is as serious as it is underutilized: the early detection and prevention of colorectal cancer. See there! A small glistening bleb about the size of a pea lurks in your transverse colon—it's a polyp. Minutes later, it's been easily removed and sent off to pathology. Precancerous or not, you're happy to be rid of it. Maybe you'll need another exam in five years, or maybe there will be a better way to check for this common malignancy by then. We'll learn more in an update by Dr. Logan Faust.

Our journey is over—it was a grand adventure! Maybe next time we'll go "Jacques Cousteau" and explore your urinary tract! ◇

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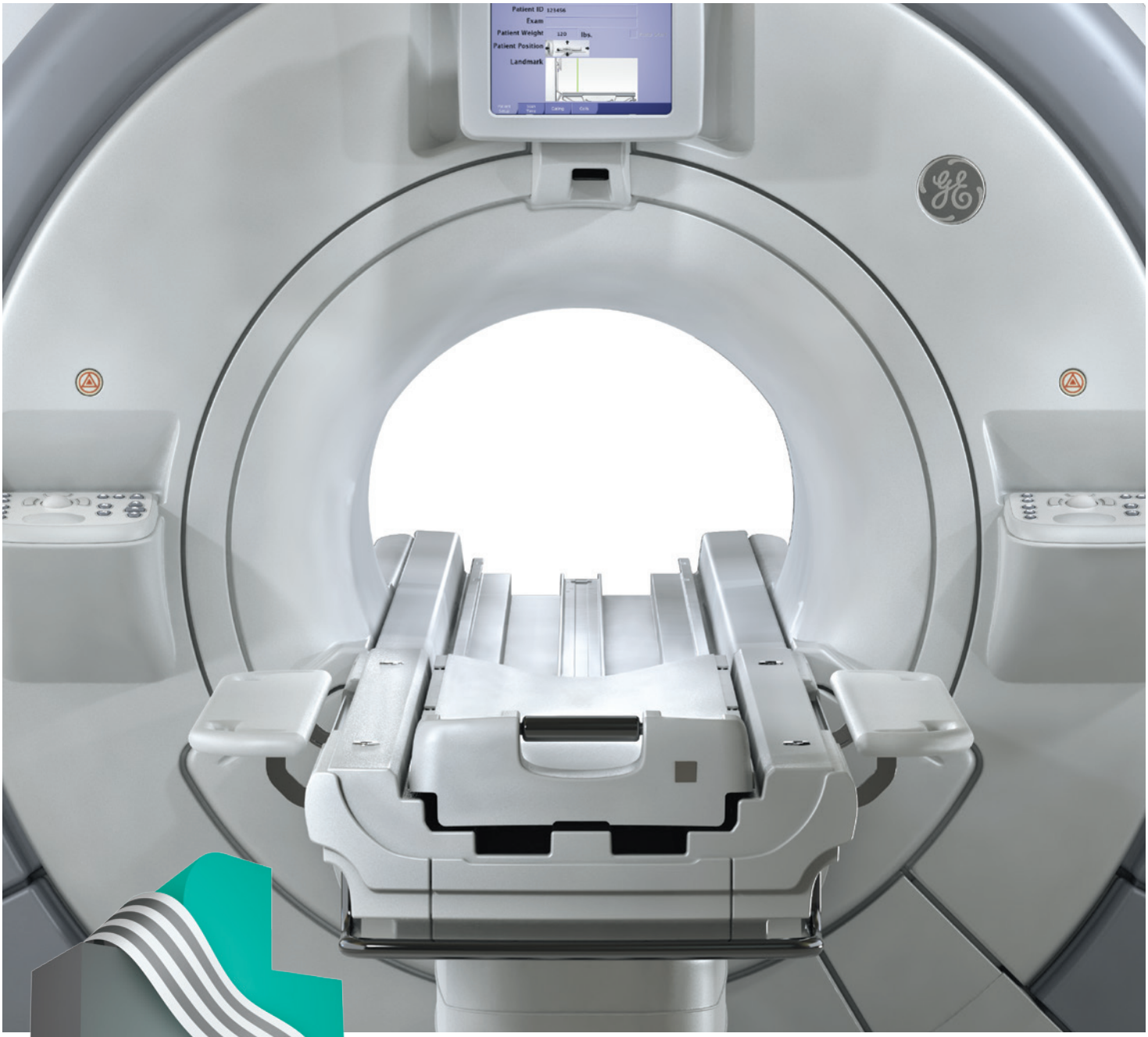

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Weaning GERD Patients off PPIs

Sarah Murphy, MD, and Hana Grobel, MD

Mary (not her real name) is a 45-year-old woman who originally presented with mild gastroesophageal reflux disease (GERD) and was started on a proton pump inhibitor. When we first saw her three years later, she was still on PPIs.

As family physicians, we see many patients like Mary who are initially prescribed PPIs for mild GERD, continue their medication for a long time, and subsequently suffer various side effects associated with PPIs. The question that arises is how to safely wean these patients off PPIs. One possible answer is to use an integrative medicine approach.

But first, let's back up and consider the function of the entire gastrointestinal tract and the processes that are involved in maintaining the health of our guts. Taken as a whole, the GI tract is one of the largest organs in our body, and its surface area can expand to the size of a tennis court. In our lifetime, we take in 30–40 tons of food that we break down, process, sort, and then use or eliminate.

In addition to the cells of the GI tract, the gut contains 100 trillion bacteria (400 different species), which is 10 times more than the amount of cells we have in our entire body. These bacteria break down food to make nutrients more available, inhibit pathogenic bacteria, and form a layer on the gut mucosa, which protects the intestinal lining and communicates with the enteric immune system.[1,2]

Drs. Murphy and Grobel are both Integrative Medicine Fellows at the Santa Rosa Family Medicine Residency.

From the perspective of integrative medicine, when we ingest substances that harm this delicate ecosystem, the gut barrier can break down (known as increased intestinal permeability), the microbial ecology can become imbalanced (called dysbiosis), and we can ultimately get sick.[1] Disease not only shows up in the form of GI disorders (e.g., GERD, IBD, IBS, gastroenteritis), but can also present as systemic problems.[3] When the gut mucosa is disrupted, it can become inflamed. Through the more permeable intestinal walls, improperly digested food substances can cross the GI mucosa and trigger further inflammation.[1]

How do we keep our guts healthy and our immune systems intact? One integrative approach is to use the 5Rs of Functional Medicine, where the goal is to support optimal GI health and address the underlying mechanism of disease. The 5Rs stand for *remove, replace, repopulate, repair* and *rebalance.* These methods can be applied to many GI conditions, including GERD.

The problem with GERD is not that there is too much acid, but that the acid is in the esophagus rather than the stomach. PPIs block the secretion of acid, thus eliminating symptoms, but they do not address the underlying problem of regurgitation of the gastric lumen contents into the esophagus. In other words, PPIs don't cure GERD; they only treat the symptoms.

Over time, the body upregulates acid production to compensate for the lack of acid secretion, so stopping PPIs becomes difficult because of rebound symptoms.[4] Some studies have found that long-term PPI use is associated with hyperplasia from increasing gastrin production, as well as increased gastric atrophy.[5,6] Although long-term PPI use has been associated with an increased incidence of gastric cancer, no direct link has been established.

PPIs are valuable in the short-term treatment of GERD, but long-term use may lead to serious complications, including increased risk for pneumonia and Clostridium difficile, and decreased absorption of vitamin B12, calcium, magnesium and iron.[7–12] In fact, our patient Mary was found to be Vitamin B12 deficient.

Despite these potential complications, PPIs are recommended in many circumstances, such as preventing gastrointestinal bleeding in elderly patients on NSAIDs. As with other medications, physicians need to balance the risks and benefits of PPIs, depending on the condition. They should also bear in mind that many patients are on PPIs with no good indication.

The long-term side effects of PPIs make sense based on the multiple roles of acid in the stomach. Acid functions to kill bacteria in the stomach, and it helps break down food to make nutrients more available. In

the duodenum, acid helps stimulate release of pancreatic enzymes, which further aid digestion. Higher acidity in the stomach also increases the tone of the lower esophageal sphincter. Thus, acid production plays an important role in tightening LES tone, getting rid of unwanted bacteria, and providing us with properly digested nutrients.

Our goal with Mary was to wean her off PPIs and help her regain the normal function of her GI system. We used an integrative approach based on the 5Rs, as outlined below. Such an approach should begin at least one week before starting to wean patients off PPIs.

Remove. To stop symptoms and prevent their return, it is important to remove the triggers. Certain foods can be aggravating, including caffeine, spicy foods, alcohol, chocolate, fatty foods, dairy, and acidic foods, such as orange juice and tomatoes.[13,14] To identify triggers, patients can use a food diary to document food intake and symptoms. Alternatively, patients can try an elimination diet where specific foods are eliminated from the diet for 2–4 weeks, and re-introduced one at a time to see if symptoms return.[15] Other triggers may include tobacco use, increased weight, prone position, stomach distention and stress.[14] For some patients, addressing lifestyle factors may be enough to stop their GERD symptoms. Don't underestimate the power of tobacco cessation, weight loss, propping the head of the bed 4–6 inches, eating meals several hours before lying down, eating smaller meals and stress management.

Replace. Once the main triggers are removed, non-aggravating nutritious foods can take their place. Patients may also benefit from replacing vitamin B12, calcium, magnesium or iron, if low.[9] In addition, one small study found that, instead of suppressing acid, some patients may benefit from supplementing with acid to increase LES tone, break down food and stimulate digestion.[16]

Repopulate. Patients who suffer from small bowel bacterial overgrowth after long-term suppression of stomach acid may benefit from probiotics. We recommend at least 10–14 billion units daily, preferably with several different species present. Some symptoms of bacterial overgrowth include bloating, gas, diarrhea and abdominal cramps.[17]

Repair. Various herbs and supplements may help protect and repair the lining of the gut.[3] Many of them act as demulcents and create mucoprotection of the esophageal mucosa, but they can also decrease absorption of other medications, so medication doses must be monitored.[3] One week prior to weaning off PPIs, patients can start taking one or more of the following herbs:

- **Marshmallow** (althea officinalis): can be ingested as tea, up to 5–6 grams daily, or as a tincture, 5 mL after meals.
- **Licorice** (glycyrrhiza glabra): best taken as deglycyrrhizinated licorice (DGL) 380 mg tablets, 2-4 tablets taken before meals. Glycyrrhizin acts as a mineralocorticoid and can cause hypertension, hypokalemia and edema with prolonged use, so deglycyrrhizinated licorice is recommended.
- **Slippery elm** (ulmus fulva) root bark powder: one to two tablespoons of the powder mixed with water and taken after meals and before bed. To increase palatability, mixture can be sweetened with honey.
- **Chamomile** (matricaria recutita):

PPI Taper

Remove triggers

- Foods, especially acidic, spicy, fatty foods, alcohol, caffeine and dairy: Consider elimination diet.
- Increased intra-abdominal pressure: Encourage weight loss, avoid tight-fitting clothes.
- Stomach over-distension: Encourage smaller meals and less fluid intake with meals. Slow down, chew food well and relax while eating.
- Prone position: Eat last meal 4–5 hours before bed, place 4–6" blocks under head of bed (don't prop on pillows as this can increase intra-abdominal pressure).
- Smoking: Stop.
- Stress: See "Rebalance," below.

Replace

- Vitamin/mineral deficiencies: Consider B12, magnesium, calcium and iron. (Goal for B12 >400 pg/mL. Measure RBC Mg, not serum Mg).
- Consider betaine hydrochloride 650 mg tabs 30 minutes before meals. Start with lower doses, increase until symptoms return, then back down to previous dose. Avoid with NSAIDs or steroids.

Repopulate

- If signs/symptoms of small bowel bacterial overgrowth (bloating, gas, diarrhea, abdominal cramps) from poor digestion, consider probiotics (10–14 billion units daily, multiple species present).

Repair

Add one or more of the following:

- Marshmallow: Tea up to 5–6 g daily or 5 mL tincture prior to meals.
- DGL 3x380 mg tablets OR Sucralfate 1 g after meals.
- Slippery elm: 1–2 tbs powdered root in water OR 500 mg caps OR 5 mL tincture TID.
- Chamomile: 1–3 g in tea, TID to QID.
- Throat Coat tea: Can be taken with meals.

Rebalance

- Decrease stress: Lifestyle changes, mind-body techniques
- Regular aerobic activity: Not right after meals.
- Consider other modalities, such as acupuncture.

Taper off the PPI slowly

- The higher the dose, the longer the taper. Expect rebound symptoms.
- Decrease the current PPI dose by 50% each week until patient is on the lowest dose once daily.
- In 2 weeks, change to H2 blocker. If symptoms flare, can alternate H2B every other day with omeprazole.
- After 2–4 weeks on H2 blocker, try stopping or weaning.
- After 2 weeks off H2 blocker, try tapering off supplements.
- Continue lifestyle modifications.

used for inflammation and spasmodic effects. 1–3 grams steeped as tea, 3–4 times a day.

• **Throat Coat** tea (Traditional Medicinals): contains all the above herbs (licorice root, slippery elm, marshmallow root), but in smaller amounts. Can be taken with meals.

Rebalance. The enteric nervous system houses more neurotransmitters than the brain and makes up 70% of the entire immune system, so stress can affect gut symptoms.[1,18] Many modalities can be used to help decrease stress and prevent the return of symptoms. Stress-reduction modalities include biofeedback, relaxation techniques, meditation, self-hypnosis and journaling. Some studies have found that acupuncture may be helpful for treating GERD symptoms.[19,20] Regular aerobic exercise is also recommended when tapering off PPIs, but symptoms can be exacerbated if exercise occurs right after meals.[13] High-intensity activities like running or cycling may aggravate symptoms.

When using the 5R approach above, it's important to taper off the PPI slowly. The higher the dose, the longer the taper; counsel your patient to expect rebound symptoms. Begin by decreasing the current PPI dose by 50% each week until the patient is on the lowest dose once daily. After two weeks on this dosage, change to an H2 blocker. If the patient cannot tolerate going straight to an H2 blocker, you can alternate an H2 blocker every other day with omeprazole. After 2–4 weeks on the H2 blocker, taper or stop altogether. After 2 weeks off the H2 blocker, try tapering off supplements. Your patient will benefit from continued lifestyle modifications.

As mentioned above, the 5Rs can be used not only for GERD, but also for many other problems with the GI tract. We encourage our patients to see their symptoms as a message from their body that something is out of balance. Often patients themselves identify what is out of balance or come to realize that triggers such as stress can make their symptoms worse.

For Mary, her food triggers included soda (high in caffeine and acid) and fatty foods. She cut back on her intake of soda, replacing it with citrus-flavored water and herbal tea. She incorporated more whole foods into her diet and cut back on the processed foods. She worked on getting more exercise, starting with walking. She noted her symptoms were the worst at night, so she tried to eat earlier and not snack before bed.

We advised Mary to prop the head of her bed upright and described a body scan meditation that she could do before bed. We also recommended Community Acupuncture, where she could get treated on a sliding scale. She started chamomile and Throat Coat tea, several times daily.

Mary incorporated all these changes into her lifestyle prior to attempting the medication wean. Altogether, her taper from PPIs took 3 months, but now she is free of GERD symptoms. ◇

Resources

GERD patient handouts

Integrative Medicine for the Underserved, www.im4us.org/Digestive+Health&structure=Toolkit.

Integrative approach to GERD

UW Integrative Medicine, www.fammed.wisc.edu/integrative/modules/gerd.

Rx for your gut

Santa Rosa Family Medicine Residency handout, www.srfmr.org/integrative-medicine/im-handouts.

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The authors do not have any conflict of interest or any financial ties to the products recommended in this article.

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Nonalcoholic Fatty Liver Disease

Stephen Steady, MD

Nonalcoholic fatty liver disease (NAFLD) encompasses a spectrum that ranges from steatosis (abnormal retention of lipids in liver cells), to nonalcoholic steatohepatitis (fat accumulation with inflammation and liver cell injury or fibrosis), to advanced fibrosis and cirrhosis. NAFLD is strongly associated with obesity, insulin resistance and metabolic syndrome. Nonalcoholic steatohepatitis (NASH) is the leading indication for liver transplantation, but there is disagreement about methods used to diagnose NASH and no consensus on the clinical implications of histologic changes or the influence of the amount of alcohol use.

NAFLD is affected by many factors, including genetics, gender, environment and predilection to alcohol. The disease is estimated to occur in one-third of the general population. The prevalence of NASH is more difficult to determine, but it may affect 3% of the general population and 25% of obese patients. Development of NASH occurs with excess triglyceride accumulation and macrovesicular steatosis—with secondary insulin resistance leading to further alterations in hepatic pathways of uptake, synthesis, degradation and secretion of free fatty acids.

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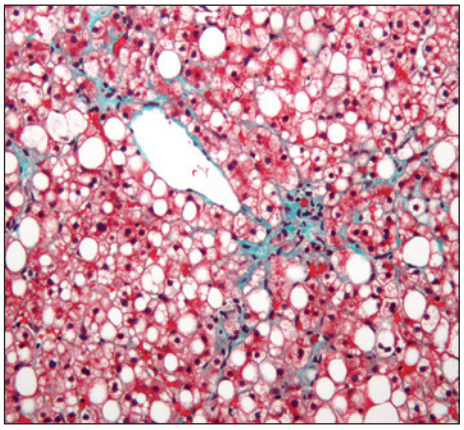
A second insult occurs from these changes, mainly oxidative stress caused by mitochondrial dysfunction and proinflammatory cytokines; hepatocyte apoptosis then occurs. Morbidity and mortality are high in NASH patients, and their most common causes of death are coronary artery disease, malignancy and liver-related mortality. While most patients with NAFLD have a benign clinical course, NASH patients have an 8–25% chance of progressing to cirrhosis and complications in 10–20 years. Cirrhosis caused by NASH is a risk factor for hepatocellular carcinoma at 3–8% in 5 years.



Micrograph of NAFLD.

Short of a liver biopsy, clinical parameters to diagnose NAFLD are age 45 years and older, obesity at any age and type 2 diabetes. An aspartate aminotransferase-to-alanine aminotransferase (AST/ALT) ratio greater than 1 has been shown to predict more severe histologic disease. It is relevant to exclude excess alcohol consumption, defined as 30 grams per day for men and 20 g/d for women within the past 5 years.

Ultrasound of the liver can confirm steatosis but cannot rule out steatohepatitis or the extent of fibrosis—plus the sensitivity drops if less than 30% of the hepatocytes contain fat. CT scan and MRI have greater sensitivity for steatosis but once again cannot distinguish steatohepatitis with or without fibrosis. Liver biopsy is the only way of determining bland steatosis from steatohepatitis and degree of fibrosis. Despite the usefulness of liver biopsy, it has poor patient acceptance. In the subset of patients with predictors for more severe histologic disease, a liver biopsy should be considered earlier.

In patients with NASH, treatment of obesity has been shown to improve not only the biochemical markers, but also the histology. Bariatric surgery has been shown to resolve the steatosis, but not the fibrosis. Further studies are needed to determine if bariatric surgery is appropriate for NASH patients. Studies on insulin-sensitizing agents such as metformin have shown discrepant results. Likewise, use of thioglitazones hasn't been shown to improve the histology of NASH patients, but it has reduced aminotransferases and steatosis.

The literature is sparse concerning lipid-lowering agents and NAFLD treatment. A common side effect of statin medications is elevation of liver test. Patients likely to have NAFLD with baseline elevation of liver test don't have a higher incidence of liver enzyme elevation or hepatotoxicity with statins than control subjects who did not receive statins. The PIVENS

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trial showed that the antioxidant vitamin E, at 800 IU per day, improved NASH vs. placebo and also decreased the aminotransferase.[1] Other studies have shown discordant results in histology improvement with vitamin E. Hepatoprotective therapy with ursodeoxycholic acid has shown no benefit over placebo on liver test and histology in patients with NASH.

One small study did show histologic improvement with pentoxifylline in NASH patients compared to placebo.[2] ACE inhibitors and angiotensin-receptor blockers may decrease fibrosis; a small study with ARBs did show improvement in histology and fibrosis.[3] L-carnitine in a randomized controlled trial did improve steatosis, NAFLD histologic activity score and aminotransferases.[4] An inverse relation between coffee consumption and fibrosis has been seen in multiple studies.

Generalized screening for fatty liver in all at-risk patients may be difficult since the accuracy of noninvasive diagnostic tools remains poor and there is no clearly established treatment for NASH except weight loss. A liver biopsy should be discussed if there is strong suspicion of NASH, but active management of the metabolic syndrome (obesity, diabetes, hyperlipidemia and hypertension) should be done anyway. Practice guidelines recommend treatment options of weight loss, vitamin E and possibly pioglitazone for NASH. All other therapy will require further investigation. ◇

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Danger on the Dinner Plate

Kenneth Kurtz, MD, MSc

Sonoma County is known for great gourmet food, but for people with food allergies or intolerances, specific foods can be harmful or even dangerous.

Food allergy can be defined as a reproducibly occurring adverse health effect resulting from a specific immune response to a food. Food allergy is often over-reported by patients in the clinic and in survey studies. Public perception is that 20–25% of the population has food allergies, but the actual prevalence of food allergy is 6–8% of children and 3–4% of adults.

More than 170 foods have been associated with immunoglobulin E (IgE) mediated food allergy. However, only a handful of foods are responsible for the majority of reactions. The most common foods associated with allergy are milk, wheat, soy, egg, peanut, tree nut, fish and shellfish. The most common food allergen in children is milk; for adults, it's shellfish. Many studies have suggested a rise in the prevalence of food allergy over the past 10–20 years.

Differential Diagnosis

Many episodes of food-associated symptoms are not allergic at all. Any symptoms occurring in association with a particular food are called adverse food reactions, either immunologic (allergic) or non-immunologic (non-allergic).

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Examples of foods associated with allergic reactions.

Non-allergic food reactions are often termed food intolerances, and they have varied mechanisms, including metabolic (e.g., lactose intolerance, alcohol intolerance), pharmacologic (e.g., caffeine), toxic (e.g., bacterial toxin induced scombroid fish poisoning), psychological (e.g., food aversion, anorexia nervosa), and idiopathic or unknown mechanism (e.g., sulfites).

Lactose intolerance is particularly common. Lactose is a key milk sugar, and the associated symptoms (bloating, cramping, nausea, and diarrhea) are generally confined to the gastrointestinal tract. The syndrome is caused by loss of the body's ability to produce lactase, which is the enzyme necessary to break down lactose. Consequently, patients with lactose intolerance suffer from symptoms in a dose-dependent manner when milk products are consumed because of the osmotic effects of unabsorbed lactose retained in the intestinal lumen.

In contrast to food intolerances, allergic food reactions are mediated by the immune system. Food allergies can be broken down by mechanism into IgE-mediated, mixed IgE-mediated and non-IgE-mediated, and non-IgE-mediated or cell-mediated.

IgE-mediated reactions to food include anaphylaxis, acute urticaria and angioedema, contact urticaria, immediate gastrointestinal hypersensitivity, bronchospasm, and pollen food allergy syndrome, which is also known as oral allergy syndrome. This latter syndrome is particularly common in pollen-allergic patients, who experience oropharyngeal symptoms of itching and swelling after eating uncooked fruits and vegetables. This syndrome is caused by labile allergens in these foods that cross-react with pollen. The allergens are rapidly destroyed in the environment of the stomach. As a result, systemic allergic symptoms do not develop. Cooking the food in question usually denatures the allergens and deactivates their allergenicity.

Mixed IgE-mediated and non-IgE-mediated disorders include atopic dermatitis and eosinophilic esophagitis or gastroenteritis. Non-IgE-mediated reactions to food include food protein-induced enteropathy (FPIES), allergic proctocolitis, Heiner's syndrome, celiac disease and the associated dermatitis herpetiformis. These disorders are generally thought to be cell mediated. The mechanism for Heiner's syndrome is unknown.

Gustatory rhinitis is often confused

with food allergy. Patients with this syndrome suffer from rhinitis symptoms, especially rhinorrhea, in association with eating hot or spicy foods.

Functional bowel disorders (e.g., irritable bowel syndrome) can masquerade as food allergy. In these cases, the act of eating itself may cause the symptoms. Allergy testing and elimination diets are seldom helpful, and management of these patients can be difficult.

Diagnosis

A general approach to the diagnosis of food allergy is to first determine whether the episode was an allergy or intolerance, and then determine if the episode was IgE-mediated or non-IgE-mediated. The most essential aspect of diagnosis is taking a careful history. Particular attention should be paid to what was eaten and when in relation to the onset of symptoms. Reproducibility of symptoms is also important. The idea is to see if the patient history is consistent with one of the above categories of adverse food reactions based on mechanism. If an IgE-mediated reaction is suspected, then allergy testing is indicated. In general, IgE-mediated reactions will occur both rapidly and reproducibly with ingestion of the responsible food.

There are two validated and commonly employed methods for food allergy testing: skin prick testing (SPT) and serum-specific IgE. Serum-specific IgE is generally considered less sensitive than SPT, and it is also expensive.

It is important to remember that a positive allergy test indicates the presence of specific IgE antibody (known as sensitization) but does not always indicate clinical reactivity (known as allergy). The size of a positive SPT and the level of serum-specific IgE correlate with the likelihood of reaction, but not the type or severity of reaction. Commercially prepared skin-test extracts may be inadequate, so skin testing with fresh foods may be necessary. For these reasons, it is critical to be judicious in selecting which foods to include when testing the patient and interpreting the results.

A history consistent with food allergy in combination with evidence of specific IgE by positive allergy test to the food in question confirms the diagnosis of IgE-mediated food allergy. Occasionally, the diagnosis will require challenge to the food in question, but this is potentially dangerous and should only be attempted by a specialist in the appropriate clinical setting. Unfortunately, there are no validated tests for most other forms of food allergy and food intolerance. Elimination diets can sometimes be helpful in these cases. Celiac disease is an important exception because a screening blood test is available.

Treatment

An acute IgE-mediated reaction to food is a life-threatening medical emergency. Epinephrine, the drug of choice for food-induced anaphylactic reactions, should be administered intramuscularly. All patients who are at risk for anaphylaxis should have 24/7 immediate access to self-injectable epinephrine, and they should seek immediate medical attention if they use it. Antihistamine medications should play a secondary role, especially for skin itching, hives and upper respiratory symptoms of rhinitis. A written emergency action plan can be helpful for the patient or caregiver.

Treatment of asthma symptoms may warrant administration of inhaled bronchodilators, although this is often unnecessary once epinephrine has been given. Supplemental oxygen should be administered if available. Hypotension is treated by placing the patient in the head-down position, using intravenous volume replacement and vasopressor drugs if necessary. Severe cases of angioedema of the neck may require intubation and mechanical ventilation.

Long-term treatment currently focuses on careful avoidance of the offending food. In general, if a food has been reproducibly associated with some untoward effect, then that food should be avoided. Allergy testing can help guide this in some clinical circumstances, and allergy specialist consultation is advisable. It is important to make the diagnosis accurately. Food avoidance can place a substantial burden on the individual patient and their families, and it can have significant impacts at school and work. In some cases, it can necessitate a change in career.

At the present time, allergen immunotherapy (also known as allergy shots) has no role in the treatment of food allergy.

Patient education is critically important. Educational resources include allergy specialist consultation and written materials. Consultation with a nutritionist can be helpful. In addition, there is a great deal of information available over the Internet, but not all online materials are reliable.

There is some reason for optimism. Research scientists are actively studying new treatments for food allergy, including desensitization protocols employing foods heated to high temperature and Chinese herbal preparations and medications.

Most patients with IgE-mediated allergy to milk, egg, wheat and soy will lose their sensitivity by school age. IgE-mediated allergy to peanut, tree nut and seafood tend to persist, so periodic evaluation by an allergy specialist and repeat allergy testing is warranted. Infant forms of gastrointestinal allergy usually resolve by age 3, but toddler and adult forms of gastrointestinal allergy are more persistent.

Summary

Food allergy represents a significant health burden to our gastronomically oriented community. Correct diagnosis can be difficult but is essential for reducing the risk of future reactions and minimizing unnecessary avoidance of nutritionally important and delectable foods. All patients (or their caregivers) with IgE-mediated food allergy should carry self-injectable epinephrine at all times. Specialist consultation is warranted to ensure accurate diagnosis and management of food allergy. ◇

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Celiac Disease and Non-Celiac Gluten Sensitivity

Amy Burkhart, MD, RD

The gluten-free diet is everywhere! For the public, it has become a panacea for health woes, an answer to years of ongoing problems. In the food industry, it creates a twinkle in many a CEO's eye—one that looks strikingly similar to a dollar sign. The gluten-free community has taken on a life and personality of its own.

In this day and age of social media, confusion and misinformation about celiac disease and non-celiac gluten sensitivity are widespread. As physicians, particularly in primary care, we have the opportunity to correct misperceptions as well as identify patients with these common and underdiagnosed conditions. The media swirl surrounding gluten is vast, and we need to respond to patient questions with accurate information and a well-informed diagnostic plan.

I have a large number of patients in my practice with celiac disease (CD) or non-celiac gluten sensitivity (NCGS), and the disparity in diagnosis and treatment in patient histories is astounding. There is confusion on many fronts. Misinformation stems in part from Internet lore and well-meaning friends, variables that are difficult to control. But I also see many people whose physicians have given them misinformation, or no information, about CD and NCGS. This shortfall is accompanied by the more recent trend of physician recommendations to start a gluten-free diet to "see if it helps" without first doing appropriate testing for CD. While well intended, this approach can be detrimental to patients and their families.

I hope that by reading this article, our local medical community will gain a clear understanding of three key points:

- The difference between CD and NCGS.
- The importance of testing patients for CD before starting a gluten-free diet.
- Reliable resources on CD and NCGS for both you and your patients.

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Celiac Disease

Celiac disease is common. A landmark 2003 study found the incidence of CD in people who were donating blood or getting routine checkups to be 1/133.[1] If someone was symptomatic or had a celiac-related disorder such as anemia, diabetes, osteoporosis, short stature, infertility or Down's syndrome, the incidence of CD increased to 1/68 in adults and 1/25 in children. If there was a first-degree relative with CD, the incidence increased further to 1/22—irrespective of whether or not the relative had any symptoms.

CD is an autoimmune, genetic, lifelong condition that can present at any age. It causes damage to the villi of the intestinal mucosa because of an abnormal immune reaction to gluten, a protein found in wheat, barley and rye. With continued ingestion of gluten, a person with CD develops malabsorption and its subsequent complications, including anemia, vitamin deficiencies, osteoporosis, infertility and neurologic symptoms. CD is a multi-organ system disorder and can affect the thyroid, liver, heart and reproductive organs, as well as the musculoskeletal system and brain.

The face and presentation of CD have changed dramatically over the last decade. The disease is a chameleon whose presentation varies from one person to the next. Once thought to be a "wasting" disease, now up to 50% of CD patients are overweight or obese at diagnosis.[2] Another common misconception is the need for gastrointestinal symptoms to initiate a diagnostic evaluation, yet such symptoms are only present 30–40% of the time at diagnosis, and their absence should not preclude an assessment.[3] "Atypical" presentations for CD are now common, such as anemia, fatigue, osteopenia, rashes, dental enamel defects and aphthous ulcers. Also changed is the belief that CD is found primarily in Northern European Caucasians. The ethnic boundaries of CD are now blurred as the disease appears to be equally common in other ethnic groups.[4–6]

Who gets CD?

The following three factors must be present to have active CD:

Genetic predisposition. Patients must carry the HLA-DQ2 gene and/or the HLA-DQ8 gene. The presence of one or both of these genes is necessary for diagnosis of celiac disease, but their presence is not diagnostic. Thirty to forty percent of the population carries one of these two markers, yet only 5% develop celiac disease. The presence of either DQ-2 or DQ-8 only indicates a predisposition. If neither marker is present, celiac disease can be ruled out. Researchers are currently evaluating other genes for their involvement in celiac disease. Of note, there are currently no scientifically validated genes associated with NCGS.

Gluten. Patients must be consuming gluten for CD to be active.

Environmental trigger. Not all triggers are known, but identified triggers include early/repeated infections, pregnancy and GI infections.[7,8]

What are the appropriate screening tests for CD?

Patients must be consuming gluten for screening tests to be valid. Basic screening is a serum TTG IgA, which should be accompanied by total serum IgA to rule out IgA deficiency. (Some labs also include a DGP-IGA and EMA in their celiac screen/panel, or they do these tests as a reflex.) The confirmatory test is an endoscopic biopsy. Of note, many celiac centers and practitioners follow a more extensive evaluation process involving screening antibodies, genetic testing, clinical response to a gluten-free diet, and endoscopy. These protocols and other testing algorithms are beyond the scope of this article.

What is the treatment for CD?

The only known treatment for CD is a strict, lifelong gluten-free diet—100% of the time. Pharmaceutical treatments currently in clinical trial may aid in the digestion of gluten or in decreasing intestinal permeability. Current over-the-counter digestive enzymes for digesting gluten are not appropriate for people with CD. The treatments under development are meant for times when there is a risk of cross-contamination, such as when dining out. They will not be a cure, but their development will be helpful in addressing the social and psychological issues surrounding CD. One company is pursuing a vaccine, but it is only in the early stages of development.

Non-Celiac Gluten Sensitivity

In 2011 researchers began addressing the presence of reactions to gluten in patients who did not have CD.[9,10] Subsequently, a consensus panel developed the following definition of NCGS: "Non-celiac gluten sensitivity is a term that relates to one or more of a variety of immunological, morphological or symptomatic manifestations that are precipitated by gluten in individuals in whom celiac disease has been excluded." In short, patients who have been properly evaluated for CD with a negative result but experience symptoms when ingesting gluten are deemed to have NCGS.

The pathophysiology of NCGS is the subject of intense study. It appears as if NCGS may encompass several different entities rather than one discrete disorder. In some patients, their reaction may be due to the carbohydrate component of gluten, such as in fructose malabsorption; in other patients, the reaction may be due to proteins, such as amylase trypsin inhibitors.

NCGS pathophysiology is a rapidly evolving area of knowledge with many unknowns. The sensitivity does not appear to be autoimmune in nature, and it is unknown if there is a genetic component or an environmental trigger. What is known is that a gluten-free diet is beneficial to these patients and can bring on much-needed relief of their symptoms.

How do you diagnose NCGS?

There is no validated test to diagnose NCGS. Some online labs offer blood, saliva or stool tests for gluten sensitivity, but they are unvalidated and not recommended. It is impossible to develop a test when the mechanism of NCGS has not been determined. Diagnosis is made by ruling out CD while the patient is on a gluten-containing diet. Once CD is ruled out, a gluten elimination diet is prescribed. If symptoms improve, the patient is deemed to have NCGS. Using a response to initiation of a gluten-free diet as a prognostic indicator will give inaccurate results, as both celiac and NCGS can have similar responses to a gluten-free diet.

How do you treat NCGS?

At this point, a gluten-free diet is the starting point for NCGS patients. The diet may not provide complete relief, so further evaluation may be needed. Once studies clarify what NCGS truly is, more targeted and individualized therapies will be developed.

It is not clear how strict the gluten-free diet needs to be for patients with NCGS. Do they need to be as careful as patients with CD? Do they have the same risk of long-term complications if they do not adhere to the diet? The answers are unknown.

The Importance of Testing

The blood tests and biopsy used to test for CD require a patient to be consuming gluten to obtain valid results. If you start a patient on a gluten-free diet without first evaluating for CD, it becomes very difficult to get a proper diagnosis. Patients who experience clinical improvement on a gluten-free diet will rarely restart a gluten-containing diet to get an appropriate diagnosis. They finally feel well, and returning to being sick is just not an option.

The importance of testing cannot be overemphasized. Consider these factors:

CD is lifelong, but we don't know about NCGS. Why subject someone to a lifelong, strict gluten-free diet if they don't need it? The social and psychological implications can be vast.

CD requires a strict gluten-free diet. This may not be the case for all patients with NCGS. This difference can be life-changing to some patients.

CD is genetic. If you miss a diagno-

sis of CD, you may miss or delay a diagnosis in their child, sibling or parent.

CD has long-term risks and complications. These parameters may be different for NCGS. We simply don't know yet. Appropriate diagnosis is necessary for proper follow-up care.

Insurance reimbursement can be more challenging without a diagnosis. Currently, there is no reimbursement code for NCGS. You and your patients are more likely to get reimbursed for a diagnosis of CD that will be missed if it is never tested for.

Accommodations. Because of a 2012 settlement between Lesley University and the Department of Justice, schools may soon be legally required to accommodate students with documented food allergies and CD. In order to obtain ADA accommodations, students will need documentation stating they have a diagnosis of CD or food allergies. At this time, NCGS does not appear to be covered under the ADA.

I hope the information above has helped clarify the rapidly evolving topic of gluten-related disorders. Unfortunately, according to current estimates, only 15% of American patients with CD are diagnosed. By using this article and the resources in the sidebar, you should be able to identify more of these patients and get them on the road to a healthier and more vibrant life. ◇

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Reliable Resources

Beth Israel Deaconess Celiac Center: www.celiacnow.org

Celiac Community Foundation of Northern California: www.celiaccommunity.org

Columbia University Celiac Center: www.celiacdiseasecenter.columbia.edu

University of Chicago Celiac Disease Center: www.cureceliacdisease.org

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The Time for Screening Is Now

Logan Faust, MD

Talking about colorectal cancer, particularly the screening aspect, almost makes me feel like I do when I speak with my children about getting their homework done. I'm generally nagging or manipulating or cajoling—whatever it takes to get the job done. Yes, it can be inconvenient and, yes, there are other things you'd probably rather do with your time.

So why do my colleagues and I in gastroenterology keep talking about screening for colorectal cancer? If you're cynical, it's because we generate money doing it. If you're flippant, it's because we are latent video game addicts. And if you're pedantic, it's because that is what we were trained to do. I like to think we focus on colorectal cancer screening for all those reasons a little bit, but mostly because screening is where we make the biggest impact on people's lives. Frankly, screening works.

As shown by Figure 1, the rates for new colorectal cancer cases have been falling on average 2.9% each year over the last 10 years.[1] Big deal? You betcha. With more than 140,000 new cases of colorectal cancer occurring across the United States during 2013, another year of applying cajoling skills finely honed by gastroenterologists raising teenage children will result in over 4,000 people who won't need to be staged by CT, have a section of their colon removed, or undergo chemotherapy.

Even more impressive is that the death rate for colorectal cancer has similarly dropped 2.8% per year over the same period. Compared to 2013, more than 1,400 lives won't be lost in 2014, because of past polyp removal, early detection and improved treatment. Compared to 2004, in 2014 there will be nearly 30% fewer deaths from colorectal cancer! And no matter how effective chemotherapy may be, there is no question that detecting tumors earlier is critical: 5-year survival is 90.3% with localized disease, but only 12.5% when disease has spread to distant sites (see Figure 2). If you've been an advocate for screening all these years and haven't taken the time to congratulate yourself, you may do so now.

For those who remain skeptical about the benefits of screening, several articles and conference presentations from 2013 should put all but the technical issues to rest. In September, at the European Cancer Congress, researchers presented data on colorectal cancer extracted from the Survey of Health, Aging and Retirement in Europe (SHARE).[2] The survey reviewed screening via fecal blood testing and/or endoscopy in men and women age 50 and over in 11 European countries between 1989 and 2010. As the researchers stated, "The greater proportions of men and women who were screened, the greater the reductions in mortality."

By using countries with similar healthcare services but varying screening rates, the survey highlighted the benefit of screening itself. In France, for example, 34% of men reported a prior endoscopic screening, and colorectal cancer mortality declined 31% over the 20-year survey period. In contrast, only 12% of men in the Netherlands were screened with endoscopy, and the decline in mortality was only 4%. Similar disparities were seen between other countries with high rates of screening, such as Austria, and those with lower rates, such as Greece. In Greece, where screening rates are particularly low, mortality rates from colorectal cancer actually increased over the study period.

Two other studies of note came from the *New England Journal of Medicine*. Whereas for many years colonoscopy was known to be associated with a reduced incidence of polyp formation, there had been no direct evidence of a decrease in mortality, until the first study linked colonoscopy to a decrease in mortality.[3] Using data from 88,902 participants followed over 22 years in the Nurses' Health Study and the Health Professionals Follow-up Study, researchers found that both colonoscopy and sigmoidoscopy were associated with reduced incidence and mortality from colorectal cancer, and that colonoscopy was associated with reduced incidence and mortality in proximal colon cancers.

The second study analyzed data on nearly 50,000 patients from Minnesota with 30 years of follow-up who underwent fecal occult blood testing.[4] (Patients who tested positive received follow-up endoscopy.) That study also found a persistent reduction in colorectal cancer mortality.

Colon cancer screening guidelines from the U.S. Preventive Services Task Force were last updated in 2008 and are well-known to physicians.[5] Screening is recommended, starting at age 50, via fecal occult blood testing, sigmoidoscopy or colonoscopy. Testing should be routinely performed until age 75 and then individualized for patients

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76–85, depending on health and life expectancy. Detecting and removing an adenomatous polyp today likely leads to a mortality benefit in about 7 to 13 years, when that polyp would have become a life-threatening cancer. This "lead time" should guide decisions in the elderly age group. Screening is not recommended after age 85. There was not enough evidence in 2008 to assess the benefits and harms of fecal DNA testing or CT imaging of the colon.

As opposed to screening guidelines, surveillance guidelines—when to repeat an exam after a polyp has been detected—were last updated in 2012.[6] Virtually no changes were made from prior recommendations, with the exception of adding intervals for serrated lesions, which are polyps that have similar malignant potential to adenomas (and may be called "serrated adenomas" by the pathologist) but morphologically are usually flat and harder to detect.

Now you may be asking yourself, "OK, the tests seem effective and the evidence is strong, but can't we come up with something other than probing or smearing?" To that end, all sorts of techniques are being examined, mainly in an effort to eliminate the inconvenience and risk of the colonoscopic exam. None are ready for prime time, although stool DNA testing is available, if not FDA-approved. Some of the more interesting techniques include:

- Labradors trained to detect in a stool sample, or even on a patient's breath, the scent of volatile organic compounds produced by colonic tumors.
- Computer analysis of backscattered light shined in the rectum via a thin optical fiber, allowing detection of the degree of malignant potential of the entire colon.
- Injection of an IV contrast, GE-137, that highlights neoplasia when light of a specific wavelength is used.
- Stool testing for tumor-derived markers, such as M2-pyruvate kinase, or for direct DNA mutations associated with colorectal cancer (Exact Sciences sDNA test).

After "When do we start?" and "When can I eat?" the most common question asked after colonoscopy and polypectomy has to be, "What can I do to prevent polyps?" Like other cancers, colorectal cancer results from a poorly understood interaction between inherited susceptibility and environmental factors. We rely heavily on secondary prevention (removing polyps after they have developed) rather than primary prevention (preventing the polyp from occurring in the first place). Having said that, there are certain factors that are within patients' control and that may help reduce their risk of disease.

The National Cancer Institute has compiled a well-documented list of factors associated with both increased and decreased risk of colorectal cancer.[7] For starters, alcohol consumption is associated with colorectal cancer. Drinking 45 grams/day, or about 3–4 drinks, increases your risk 40%, according to a meta-analysis of eight cohort studies.[8] Cigarette smoking is also a problem, with a higher rate of polyps and cancers seen in smokers, particularly after 20 years of tobacco use.[9] According to past estimates, 12% of colorectal cancer deaths are attributable to smoking. Obesity is also associated with an increase in both the incidence of and mortality from colorectal cancer. Men and women with a BMI of 30–34.9 had a relative risk of colorectal cancer death of 1.47, compared with patients with a BMI of 18.5 to 24.9.[10] Try not to think of that when reaching for dessert.

On the upside, according to a meta-analysis of 52 observational studies, increased physical activity may reduce your risk of colon cancer 40–50%.[11] Aspirin clearly reduces colorectal cancer incidence and mortality, as demonstrated by an American Cancer Society study of 600,000 adults.[12,13] Use of aspirin needs to be daily for at least 5 years to have an impact. Other NSAIDs may be beneficial as well, with sulindac being the best studied. Enthusiasm is tempered when the cardiovascular risks of selective COX-2 inhibitors such as celecoxib and rofecoxib are considered, and it appears that even non-selective NSAIDs may have adverse cardiac outcomes if taken on a regular basis.

Statins received some initial favorable press in terms of colon cancer prevention, but this promise was not been borne out by studies.[14] Similarly, vitamin E and various supplemental antioxidant vitamins studied in over 170,000 patients showed no evidence of adenoma prevention.[15] Vitamin D, on the other hand, does have promise, with a systematic review of published observational studies suggesting that a daily intake of 1,000 IU as well as a serum 25-OH vitamin D level of 33ng/ml were both associated with a 50% lower risk of colorectal cancer.[16] Time will tell if this association remains true. Finally, neither fiber supplementation

Figure 1. Rates of new colorectal cancer cases

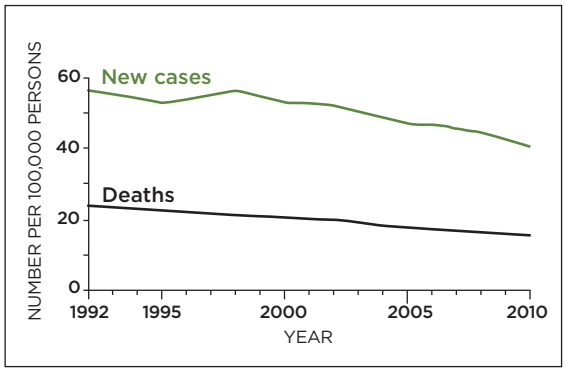
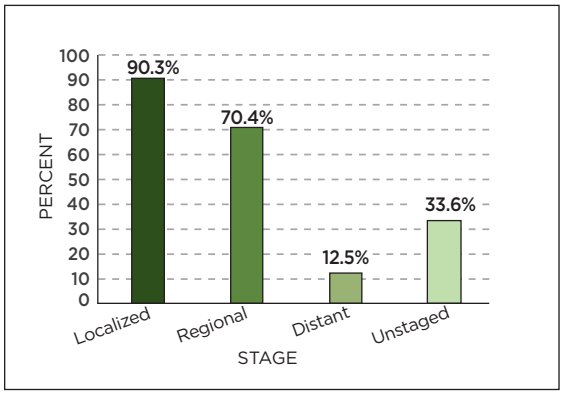


Figure 2. Five-year relative survival for colorectal cancer



nor a low-fat diet has been consistently beneficial on colorectal cancer incidence or mortality.

So, while you are washing down your aspirin and vitamin D supplement with a non-alcoholic beverage at the gym, consider a few more numbers. More than 1.1 million people are living with colorectal cancer in the United States today. Currently about 5% of men and women will be diagnosed with colorectal cancer at some point in their life. Evidence of a benefit from screening, both in terms of incidence and mortality is strong, much stronger than for prostate or breast cancer. Moreover, the false positive rate of colonoscopy and polypectomy for cancer is near zero.

Despite these benefits, one in three Americans aged 50–75 has still not been tested for colorectal cancer. Of these unscreened patients, 76% have health insurance that would cover the cost of the testing. Altogether, that means 20 million American adults of screening age are at risk for a largely preventable disease. Try not to let your practice contribute to these statistics. ◇

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PHASE: Preventing Heart Attacks and Strokes Everyday

Jerome Minkoff, MD, FACP

Since most Americans die from cardiovascular disease (CV), it make sense to take a coordinated approach to patients at highest risk. We know who these folks are. Patients with prior myocardial infarction (MI)—or known coronary disease, cerebrovascular disease (cerebrovascular accident or transient ischemic attack), peripheral vascular disease or abdominal aortic aneurysm—all have an increased risk of MI and cerebrovascular accident. Patients with diabetes mellitus (DM) have been shown to have a risk of MI equal to patients without DM who have had an MI.[1]

Diabetes mellitus has been increasing in prevalence throughout the United States for several decades. Because of its microvascular complications (neuropathy, retinopathy and nephropathy), it is the leading cause of non-traumatic amputations, blindness and end-stage kidney disease. Because of their hyperglycemia, insulin resistance, abnormal lipid metabolism and increased prevalence of hypertension, patients with DM have four times the risk of cardiovascular death as patients without DM.

In 1995, physicians and staff of The Permanente Medical Group in Santa Rosa—under the leadership of Chief of Medicine Dr. James Lee and Physician in Chief Dr. Robert Schultz—redesigned our approach to primary care and created a program to address the high risks of CV complications in diabetic patients. That program was eventually expanded and taken on by the entire Kaiser Permanente (KP) Northern California region and was named Preventing Heart Attacks and Strokes Everyday (PHASE).

Dr. Minkoff, a local champion of the PHASE program, is an endocrinologist at Kaiser Santa Rosa.

We knew at the time that improved glycemic control is correlated with fewer microvascular complications, and also that KP's Division of Research had developed a registry of all diabetic patients, allowing us to reach out to these members. We could remind them to do their labs (A1c, lipids and annual microalbumin to screen for nephropathy) and retinal screening. Our computerized data also gave us their blood pressure, so we could intervene to control it. Arguably BP control and lipid control, especially lowering LDL, are more potent than glucose control in protecting type 2 DM patients from CV complications.

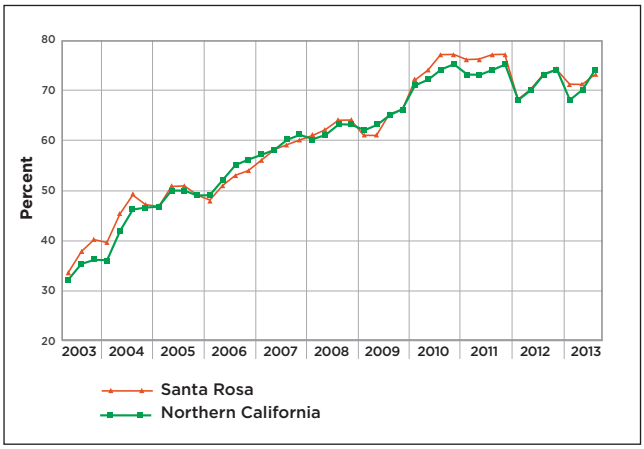
We trained four registered nurses in diabetes protocols to control glucoses with oral and injectable medications. They also attended to BP and lipids using protocols that became the standard in KP's Northern California region. We eventually trained hundreds of RNs, pharmacists and dietitians in KP Northern California to help monitor and control the CV risk in this high-risk population. As we saw evidence that ACE inhibitors decreased CV events and death by 25% in normotensive patients with diabetes,[2] we added generic ACE inhibitors to our patients' regimens and monitored for compliance.

Since the CV risk for DM patients was so high, we aimed for lowering LDL cholesterol to ranges one would achieve in post-MI patients. When simvastatin 40 mg was shown to decrease CV events in diabetics even when cholesterol was normal,[3] we ensured that more patients with high CV risk got statins. We used lovastatin initially, escalating therapy to non-generic meds as needed to achieve LDL control.

Each primary care doctor got a report each month showing which patients with high risk of cardiovascular events needed intervention. By working with their MAs and care managers to get patients overdue for monitoring in for a visit, we found many opportunities to enhance care. Those patients with suboptimal control of glucoses, LDL or BP might get advice over the phone under protocol, or they might be brought back in for labs or to escalate treatment. A team member might have multiple telephone encounters to adjust medications, or insulin to optimize glycemic control. Screening for depression and counseling regarding smoking cessation and exercise became the standard.

Over time, each physician's quality scores became transparent, posted for

Percent of PHASE patients with LDL <100, 2003–13



the team to see how they were doing in protecting our patients. As shown by the graph above, our quality measures improved markedly from 2003 to 2013, both at KP Santa Rosa and throughout the Northern California region.

By 2009, the expectation was that anywhere a patient showed up in our medical center, their preventive health would be addressed. This protocol applied to patients in the PHASE population, as well as normal, healthy adults who might be due for a routine cholesterol check. Whether a patient showed up in ophthalmology or the ED, in orthopedic surgery or cardiology, our staff made sure that their mammogram was ordered, their LDL was due that year, their BP was controlled. Using our computer systems and dedicated staff, we made sure that all high-risk patients could show up at the labs and have their LDL and A1c tested if they were overdue for monitoring.

By identifying the population at high risk and monitoring though a registry, we were able to intervene on multiple risk factors for atherosclerotic complications. Professional and non-professional staff worked in concert to mitigate risk. Using standardized protocols, nurses and pharmacists were able to escalate treatment, and physicians were able to concentrate on the outliers. Our success was copied in multiple medical centers around KP's Northern California region, resulting in decreased CV risk, improved cancer screening and better outcomes for our members.

Did the PHASE program make a difference in outcomes? From 2001–10, transmural MI rates decreased by 62% in the KP Northern California population as a whole.[4]

Using computerized databases, we were also able to determine who was due for colorectal-, breast- and cervical-cancer screening. Through coordinated outreach to our patient population and active inreach when patients were available anywhere in the medical center, we were able to screen for early disease and treat aggressively. From 2000 to 2008, death rates in Kaiser Northern California decreased by 27.4% for heart disease, 42.2% for stroke, 31.1% for HD/stroke, 30.4% for all CVD, and 10.9% for cancer. We also saw some local changes that mirrored these results:

- We carefully track utilization, and in 2011 we found that our Santa Rosa patients required fewer cardiac catheterizations, stents and coronary artery bypass grafting, even though the trend had been increasing for years.
- In recruiting for a study of a new indication for a GLP-1 agonist in type 2 diabetics post-MI, we anticipated 100 MIs in 2011–12. We couldn't recruit a single DM patient with an MI. Every DM patient who had an MI had to be excluded due to prior diagnoses of cancer, history of transplant, or other severe intercurrent illness.
- Over a 42-day period in the fall of 2013, our emergency room had no patients with transmural MIs.

By using evidence-based approaches to mitigating CV risk, we have seen a marked improvement in outcomes in the 3.3 million lives covered by KP Northern California. Santa Rosa's experience with the PHASE program shows how personalized care, along with an integrated systematic approach to a high-risk population, can improve clinical outcomes. ◇

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When East Meets West (and Vice Versa)

Jimmy Wu, MD, MPH

Before my grandfather passed away in Taiwan last year, I recall him needing to visit eight different specialists simultaneously: an oncologist for his multiple myeloma, an endocrinologist for his diabetes, a gastroenterologist for his constipation, an orthopedic surgeon for his back pain, a dermatologist for his various skin conditions, a pulmonologist for his cough, a neurologist for his diabetic neuropathy, and an ophthalmologist for his diabetic retinopathy. If you are still paying attention, you will notice that "family physician" is not on that list. My grandfather certainly had medical issues that required a specialist's input, but if he had had a capable family physician on his "team," he would have been able to see fewer doctors, pay less money, and be less confused and scattered about his care.

This type of specialty-centered healthcare is quite common in East Asia, including China. Up until about 15 years ago, the Chinese healthcare system did not possess any sort of primary care presence. In 1949, under Mao Tsetung's influence, the infamous barefoot doctors were trained and disseminated into rural China, but these providers received only very basic medical education and skills. The barefoot doctors were considered the centerpiece of China's "primary care system" for most of the 20th century. Around the turn of the millennium, the Chinese government started to take an interest in using the concepts of family medicine to build a stronger primary care system. China's current primary care situation is comparable to when the United States began recognizing family medicine as a specialty in the late 1960s.

Dr. Wu, a family physician, is a lead clinician at the Vista Family Health Center in Santa Rosa.

Dr. Du Xueping has been at the forefront of the primary care movement in China. Under her guidance, multitudes of medical students and specialists who decided to switch to family medicine have trained to become the initial generation of family physicians in China. Her clinic is located in the heart of Beijing, and for more than a decade, she has fostered several institutional relationships with family medicine residencies in the United States, including the University of Wisconsin, Columbia University, and the UCSF residency in Santa Rosa. These relationships have helped educate Dr. Du and her many students about how family medicine is taught and practiced in this country.

A 2007 article in the *British Journal of General Practice* outlined the Chinese Ministry of Health's ambitious targets for the development of family medicine education from 2000 to 2010.[1] The ministry's hope was to "retrain 1,000 GP trainers from other specialties by 2002; by 2005 to have established a better national GP training network in all big and medium-sized cities; and by 2010 to have completed the training of GPs in service and to commence family medicine residency training in every province."

I originally met Dr. Du and her team in 2005 when I was a medical student at the University of Wisconsin. I travelled to China to learn traditional Chinese medicine and gain a sense of the workings of a different healthcare system. I have been in contact with Dr. Du since then, and when I started my family medicine residency in Santa Rosa, I worked with her on establishing a connection between our two programs. Since 2011, three separate delegations of physicians and healthcare personnel from China have visited Santa Rosa and the Bay Area.

The delegations have stayed for about a week each time, experiencing residency education, American healthcare delivery (mostly primary care), and of course American cuisine and culture. They have toured through the local Kaiser and Sutter hospitals and clinics, the Santa Rosa Family Medicine Residency, and Vista Clinic. This experience has exposed them to a diverse array of healthcare delivery systems for different populations. In addition, they have made short trips to San Francisco, local wineries, Armstrong Grove, and the beautiful Sonoma County coastline. After their week here, our visitors have shared their thoughts in meetings with the family medicine residents, residency faculty and staff.

(left to right) Santa Rosa Residency faculty Dr. Lisa Ward and Dr. Jeff Haney with last fall's Chinese visitors: Dr. Yu Shuang, Dr. Bian Li Li and Dr. He Wei Wei.

Dr. Li Xiao Xiao, a young family physician who visited in 2011, expressed her hope about how family medicine will eventually be viewed in China. "As family doctors," she said, "we are usually considered to be the lowest on the hierarchy of medical specialties; therefore, I am looking forward to more well-developed training programs that will produce higher quality graduates who will change the way we are viewed by other doctors and the people. Moreover, the government needs to allocate more funding to support the primary care cause. Only with well-trained family doctors can we build up the confidence among the patient population and help create a sustainable primary care system."

Another 2011 visitor was Dr. Yin Zhao Xia, a cardiologist who had retrained as a family physician. "Chronic disease management is quickly becoming a huge issue in China," she noted. "In order to address this, the Chinese government is becoming aware of the need to develop a solid primary care system. I feel that China needs to send their family doctors in training to learn from well-developed primary care systems in other countries. The relationship between our clinic and the Santa Rosa program has been crucial."

Dr. Yin also hoped that certain aspects of medical training she observed in Santa Rosa will become more commonplace in China. "I was most impressed by the fact that in the U.S., family physicians trained family medicine residents," she observed. "There also were strict guidelines and standards that residency programs had to abide by in their curriculum. . . . The breadth of knowledge and wide scope of practice is something I hope we can strive for."

Many of the observations of Dr. Li and Dr. Yin are supported by current medical literature. A recent article by doctors from Zhejiang University Medical School, for example, notes that, "Chinese health authorities have recognized the value and importance of accessible, continuous, coordinated, and comprehensive care."[2] Several factors, such as "the aging of the population, increased urbanization, increased chronic disease, and rising costs" have helped spur China's recent push toward more primary care, the doctors observed.

This past September, Dr. He Wei Wei, an integrative practitioner of both allopathic and traditional Chinese medicine from Nanjing, came away with a positive impression of the American people and customs. "The air quality was excellent and the scenery was amazing," she said. "It was very nice to see how friendly and sincere everybody was. It was truly a wonderful experience."

Every international relationship is a two-way street, and this one is no different. Last April, Dr. David Schneider, a core faculty member at the residency, and I were graciously invited to speak at the 10th Annual Family Medicine Scientific Assembly in Beijing. We both addressed the importance of effective teaching in the inpatient and outpatient settings.

Our hope is that the Santa Rosa residency will continue to have a presence at this international gathering, which aims to provide an identity for Chinese family physicians. Another hope is that both resident and community physi-

cians in Sonoma County will travel to China to learn about traditional Chinese medicine and the Chinese healthcare system, and further promote the spirit of family medicine and primary care.

"Family medicine in China is a rapidly evolving specialty," observes Dr. Schneider. "Because we here in Santa Rosa and the U.S. have been developing our specialty over several decades, we can share many lessons learned. Conversely, our Western allopathic system of healing has much to learn from traditional Chinese medicine, such as balance and natural healing with fewer toxic side effects."

The challenge behind most global health initiatives is that they are non-sustainable and tend to have short-lived effects. The Beijing-Santa Rosa relationship, however, has strong potential to influence an entire nation's ability to take care of its people's health. For those of us interested in global medicine, this exchange program is a great opportunity to examine our feelings of what can truly effect long-term changes in a different country.

In my view, our best hope for creating a positive outcome in the health of the world is through education, systemic change and empowerment. Through affiliations such as the exchange program, we are able to pass on valuable lessons informing China in their mission to establish a robust primary care system and improve their population's overall health. As globalization becomes more commonplace, it will be even more crucial that partnerships like this continue to flourish.

If you are interested in helping with this effort, either by assisting the visiting physicians or traveling to China, please feel free to contact me at the email below. ◇

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SCMA Awards Dinner 2013

Dr. Rob Nied, president-elect of SCMA, served as master of ceremonies.

The Vintner's Inn in Santa Rosa.

Dr. Robert B. Mims (left), a pioneering endocrinologist, received the Outstanding Contribution to the Community award from Dr. Scott Chilcott.

Dr. Peter Brett (right) received the Outstanding Contribution to Sonoma County Medicine award from Dr. Allan Hill for his work with the Melanoma Tumor Board.

CMA trustee Dr. Catherine Gutfreund, a Santa Rosa family physician, received the Outstanding Contribution to SCMA award on behalf of Dr. Walt Mills. Next to her is Dr. Richard Zweig.

SCMA HONORED FIVE LOCAL PHYSICIANS and the Northern California Center for Well-Being at its 29th annual Awards Dinner on Dec. 5. Held at the Vintner's Inn in Santa Rosa, the event attracted about 100 physicians, spouses and guests.

Retired endocrinologist **Dr. Robert Mims** received the Outstanding Contribution to the Community award for his decades of service in bringing endocrinology care and education to the entire North Coast region. "His community was not just Sonoma County, but all of Northern California," said presenter Dr. Scott Chilcott.

The Outstanding Contribution to Sonoma County Medicine award went to **Dr. Peter Brett**, a Santa Rosa oncologist who organized the Melanoma Tumor Board. After receiving the award from Dr. Allan Hill, Dr. Brett described a local cancer case that resulted in complete remission, thanks to the board's efforts. "We're all learning from each other," he observed.

Former SCMA President **Dr. Walt Mills** was slated to receive the Outstanding Contribution to SCMA award, but he recently became director of the family medicine residency in Salinas, so his former associate, Dr. Catherine Gutfreund, received the award in his stead.

In presenting the Article of the Year award to **Dr. Ted Hard,** fellow writer Dr. Rick Flinders noted that Dr. Hard is "a combination of Joseph Conrad, Robert Service and John Muir." Dr. Hard, a published novelist, described his choice to go into medicine even after his first book was bought by Hollywood.

Executive Director Alena Wall, Dr. Gail Dubinsky and five staff members at the **Northern California Center for Well-Being** received a Recognition of Achievement award on behalf of the Center, which offers patient education and health promotion. "The Center has grown into an awesome force for community education," noted Dr. Dubinsky.

For the final presentation of the evening, Dr. Jan Sonander spoke glowingly of **Dr. James Lowy,** who received the Lifetime Achievement award for co-founding the Redwood Empire Medical Group and Primary Care Associates. As Dr. Sonander observed, "He has exemplified the unique virtues of our profession, bridging science, administration and, most important, the human touch."

(left to right) Martin Rivarola, Jennifer Clouse, Alena Wall, Michelle McGarry, Lance Goller and Sandra Taverna Fernandez accepted a Recognition of Achievement award on behalf of the Northern California Center for Well-Being.

(left to right) Charlene Powers, Dr. Richard Powers and Dr. Gail Dubinsky engaged in lively dinner conversation before the awards presentations.

Dr. James Lowy (right) received the Lifetime Achievement award from Dr. Jan Sonander for helping establish the Redwood Empire Medical Group and Primary Care Associates, and for his mentoring of primary care physicians.

Wreaths at each table were sold to benefit the Health Careers Scholarship program.

The Vintner's Inn served a delicious three-course meal.

Dr. Ted Hard, an emergency physician who moonlights as a novelist and travel writer, received the Article of the Year award for "Into the Valley of Wolves," which appeared in this magazine's Spring 2013 issue.

Barbara Ramsey encouraged attendees to contribute to the SCMA Alliance's many charitable projects.

Dr. Rick Flinders (left) and Dr. Marshall Kubota share a laugh during dinner.

CMA Trustee Dr. Peter Bretan, a Sebastopol urologist, attended the dinner with his wife Melanie.

These photos and more, all by Trevor Henley, are available for download at henleyphoto.smugmug.com/Events.

Illustrating the Mind

Martin Bauman, MD

I started many years ago on the journey to becoming a medical illustrator, following in the footsteps of Frank Netter, MD. After being captivated by medicine for over 50 years, I have kept my interest in art and illustration alive. I'm still "medical illustrating," but instead of illustrating the brain and the internal workings of the body, I've been illustrating the internal workings of the mind, bringing into focus the "land beyond the light" with a process of spontaneous composition and intentional selection.

Through curiosity and invention, a dialogue begins between myself, the paint and the paper. I find myself conducting experiments in line, shape and color; the painting is completed when the spectator experiences the painting and then may name it, giving it a personal meaning, or better still, as Robert Irwin said, "Seeing is forgetting the name of the thing one sees."

Each painting remains a new experience. As in fishing, you may throw back many fish until you get a keeper. The paintings are linked by color and line density; there is minimal intention in the piece. The result is often a surprise. Over the years, I've continued my interest and am often amazed at the results. The painting is completed as the color dries, and it is not "reworked." As in life, the colors determine the line.

By capturing a moment, the painting can be looked at repeatedly, and the sense of it may change as it is viewed. It challenges each person to make sense of the world by drawing on their own experience, bringing meaning to the narrative. At times I work with people who are anxious and risk aversive. For many it is a courageous experience to plunge into a white piece of paper without a prearranged idea or content in the external world. Many of the paintings can become a projective experience, a sort of Rorschach, to gain access into the working of one's inner world and one's own story. At best, painting—like swimming, hiking or writing—is a way to discover one's own relationship to the physical and emotional landscape world. In essence, it is exciting and fun.

If you're interested in looking further, there are many of my paintings on the Internet at soundimago.com, or google "flickr watercolors martin bauman." ◇

Dr. Bauman, a Santa Rosa psychiatrist, is a lifelong illustrator.

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Further Reading

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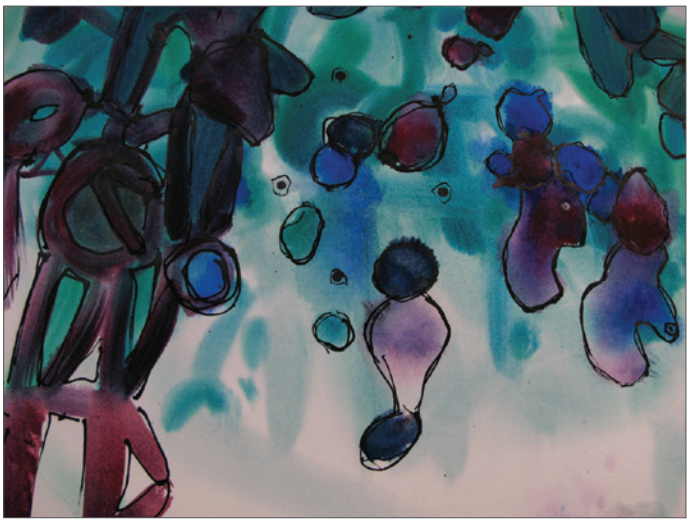

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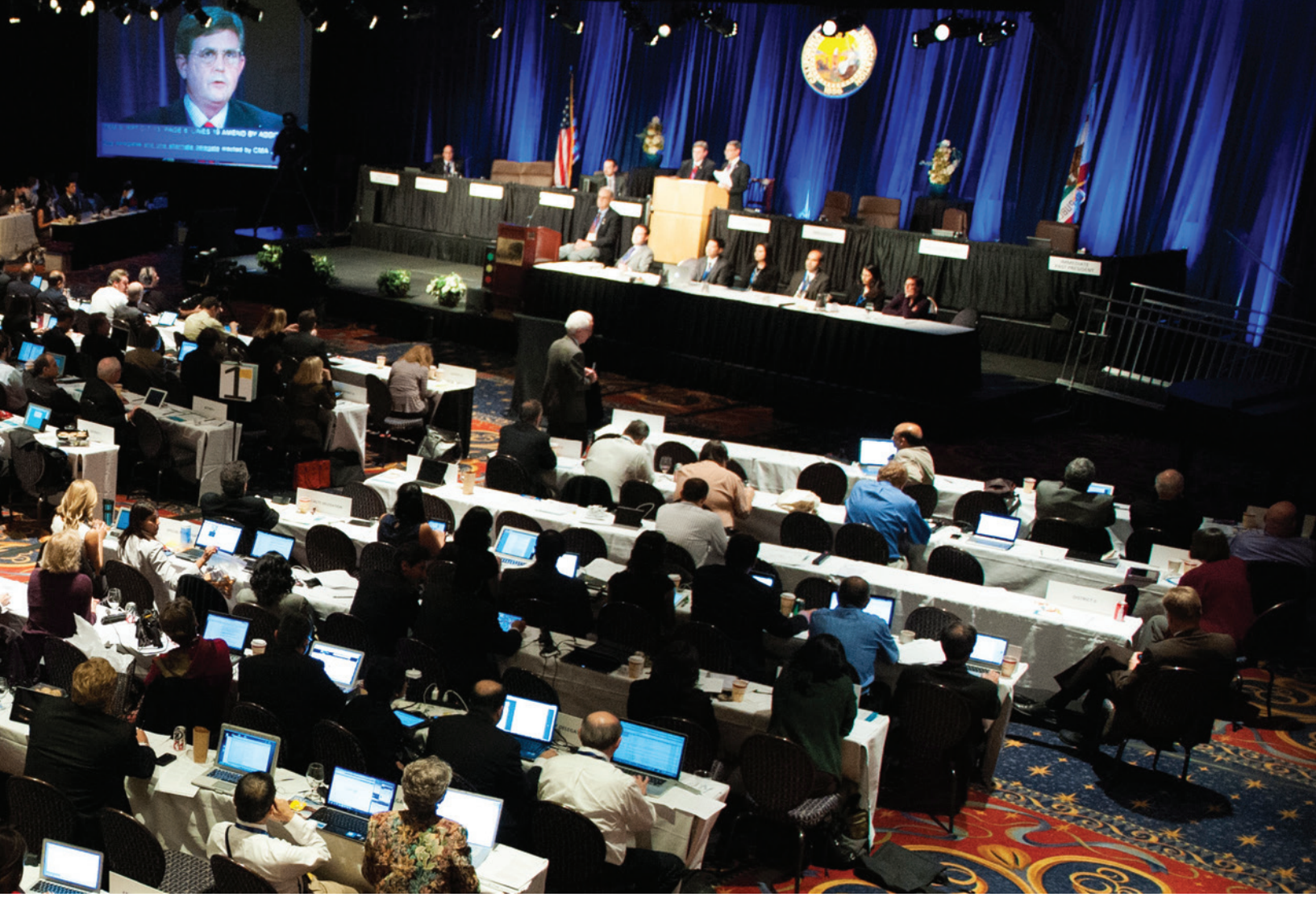
HOD 2013

CMA delegates set policy at annual meeting



More than 500 California physicians convened in Anaheim Oct. 11–13 for the 2013 House of Delegates (HOD), the annual meeting of the California Medical Association (CMA). Each year, physicians from all 53 California counties, representing all modes of practice, meet to discuss issues related to healthcare policy, medicine and patient care, and to elect CMA officers.

Over 90 resolutions were introduced and debated in reference committees on Friday, Oct. 11. Over the next two days, the complete HOD met again to debate and vote on reference committee recommendations. Sixty-three resolutions were adopted.

As a first step toward a "virtual" reference committee process that will enable a shorter, two-day meeting in future years, Reference Committee A (Science and Public Health) conducted all testimony online in advance of the meeting. All CMA members were invited to participate in the debate, and nearly 300 online comments were recorded. The committee members then met via web conference in advance of the meeting to develop their recommendations, which were presented to the HOD for floor debate on Saturday afternoon.

The HOD also elected a new president, Paradise internist Richard Thorp, MD. Humboldt surgeon Luther Cobb, MD, was tapped as president-elect.

Summaries of some of the resolutions that were adopted as policy appear on the next page. The full actions of the HOD are available to members at www.cmanet.org/hod, under the Documents tab.

House of Delegates 2013

Increased reporting of immunizations

Resolution 104-13

The delegates approved a resolution that encourages increased reporting of patient immunizations to the California Department of Public Health for purposes of vaccination, disease control and prevention.

HIV and STDs: Consent requirements for testing

Resolution 109-13

The delegates voted to support revision of HIV consent requirements to allow all healthcare providers to order a test for HIV when appropriate and to encourage routine HIV testing for all patients who are evaluated for other sexually transmitted diseases.

Graphic health warnings on tobacco products

Resolution 115-13

Delegates called on CMA to support the use of graphic image labeling on cigarette and other tobacco packaging that warns of the health impact of smoking.

Legal blood alcohol limit for drivers

Resolution 118-13

Delegates endorsed the National Transportation Safety Board's 2013 recommendation that the legal blood alcohol limit for operating a motor vehicle be decreased from .08% to .05% or lower.

District X delegate Dr. Peter Bretan testifying at the HOD.

Food insecurity screening

Resolution 122-13

The delegates directed CMA to promote that providers need to identify children and adults who are food insecure to avoid detrimental development and comorbidities and to refer them to appropriate programs and services.

Elimination of CMS outpatient observation status

Resolution 211-13

The delegates directed CMA to request that the Centers for Medicare and Medicaid Services (CMS) eliminate its "outpatient patient observation" status, which is placed upon patients whose anticipated hospital stay is 48 hours or less. Delegates noted that this practice places undue financial burden on patients and creates administrative hassles for physicians.

Health exchange benefit designs and tax deductibility of out-of-pocket expenses

Resolution 401-13

The delegates called on CMA to support efforts to develop benefit designs in the health benefit exchange that appeal to the young and healthy to boost the risk pool; and to support legislation allowing federal and state income tax deductibility of all out-of-pocket healthcare expenses.

Reimbursement for telephone/electronic patient management

Resolution 407-13

The delegates asked that CMA support legislation requiring health insurance companies to pay physicians for telephone or other electronic patient management services.

National health information exchange

Resolution 501-13

The delegates called on CMA to support the development of a secure, interoperable, nationwide health information exchange network.

Passionate Debates

Francesca Manfredi, DO

This past October, for the third year in a row, I was honored to represent SCMA as a District X delegate to the annual three-day meeting of the CMA House of Delegates. Also for the third year in a row, we convened at the Disneyland Hotel in Anaheim, where hallways are filled with Disney tunes, and each foray to the outdoors brings the sticky-sweet smell of caramel corn from the neighboring Land of Happiness.

This year was different for me, in that I had been asked to serve on a reference committee, which made the HOD experience more fun, more interesting and more work. Mickey and Minnie would have to wait. At 6:30 a.m. on Day 1 of the HOD, as our seven-member reference committee (C: Membership, Finance and Government) convened to review procedures and responsibilities, the smell was of strong coffee rather than caramel corn.

The job of the reference committees is to facilitate deliberations, hear testimony and make recommendations, which are then debated and voted on by the full House on days 2 and 3. For Committee C, there were short and easy discussions, such as: Should we draft measures to ensure senior members of county medical societies are aware of membership options available to them? And there were much more difficult issues, such as: Should the HOD aim to become an online, year-round event? (In fact, one reference committee took all its testimony online this year). Also on the agenda: Should the CMA board of trustees be limited in size?

An important topic this year was one that any good organization periodically asks itself: whether the current governance structure is effective, economical and relevant. The current arrangement for the CMA HOD is expensive. Thousands of dollars from respective county societies go to paying for accommodation and food, and three days is a significant amount of time for 500 physicians to spend together. Should the duration be shortened? Debate can get mired in detail, and some of us are undereducated about specific topics. This situation lends support to the concept of creating reference committees with specific scientific knowledge that would operate year-round, possibly replacing the reference committees entirely.

But, many argued, the act of physicians gathering in person has immeasurable value, not only for the social exchange and collegial interface, but also for appreciating the emotional investment of our state's physicians in caring for their patients. Can these elements be reliably communicated by emoticons?

One example of serious debate was Resolution 509-13, which seeks to restrict marketing influences in hospitals and medical centers. After passionate deliberation from both sides, the resolution was adopted by the House. The influence of pharmaceutical and device companies on physicians has been debated for years. Do we want national action to limit this influence across the board? Can we not police ourselves on this issue? Is open debate on this valuable?

In contrast, resolutions to eliminate menthol flavoring in cigarettes and require graphic descriptions of their health consequences are good ideas, and they were quickly and unanimously decided upon.

Would our time be better spent discussing the details of the ACA rollout, struggles over scope of practice, primary care shortages, insurance reimbursement or engagement of young physicians into the ranks of leadership? Unanimous passage of a resolution submitted by a third-year medical student regarding commercial sexual exploitation of children generated standing applause. A comment from the floor lauded the current system's attention to the concerns of the folks on the ground. Isn't that what policy-making is supposed to be about?

Peppered throughout our three-day proceedings was the looming weight of the MICRA challenge, the hot-button legal issue that might be sexy if it weren't so potentially deleterious for physicians and patients alike. While the proponents of the anti-MICRA initiative are busy gathering signatures outside your local grocery store and airing rather provocative advertisements on TV and billboards, some of our colleagues have not heard of MICRA. If we physicians will be undergoing mandatory drug testing, and if malpractice rates will be universally increased to benefit the attorneys, we should certainly have our voices heard. If you haven't read up on MICRA, please do, and discuss it with your colleagues, patients, friends and lawyers. Go to www.micra.org for more information.

Meanwhile, we will be meeting in Sacramento next October, and all comments, suggestions or resolution ideas are welcome. We are committed to representing you. Stay tuned. ◇

Email: docmanfredi@gmail.com

Dr. Manfredi, a Santa Rosa family physician, is a District X delegate to CMA.

A Place to Play, Pretend and Explore

Maria Pappas

Artist's rendering of the new Health & Science5 Lab at the Children's Museum of Sonoma County.

When their 8-year-old granddaughter, Ella Bisbee, passed away in 2010, Dr. George and Sue Bisbee experienced an outpouring of love and support from the community. To celebrate Ella's joy in doing hands-on art projects, the Bisbees decided to partner with the Children's Museum of Sonoma County, which is still under construction, to establish the Ella Bisbee Art Studio. "We wanted to create a place where children like Ella could be creative and grow through art," recalled Sue, a longtime member of the SCMA Alliance.

Both Sue and George, a Santa Rosa internist and Children's Museum board member, believe that the children's museum will serve as a valuable community resource. "It will be a place for young children to explore and learn, as well as to cultivate their creativity and imaginations," said Sue.

Inspired by the Bisbees' example, the SCMA Alliance Foundation is proud to announce its sponsorship of a new Health & Science Lab at the Children's Museum. The lab will be located inside the museum's Science and Imagination Gallery, not far from the Ella Bisbee Art Studio.

"The Alliance has an 85-year history of commitment to children, families and this community," said SCMAA Foundation President Shawn Devlin. "By investing in the museum's Health & Science Lab, we will be able to reach our youngest community members, giving them an unmatched opportunity to play, pretend and explore—all while learning more about their health.

Ms. Pappas is vice president for marketing & communications at the SCMA Alliance & Foundation.

By introducing the roles of healthcare professionals to children, we hope to inspire some of them to one day see themselves as our next generation of medical caregivers."

The Health & Science Lab will offer children the opportunity to engage in role-playing as a physician or nurse. Wearing scrubs and stethoscopes, children will learn about their health and discover how they can stay healthy, using their bodies' fascinating built-in capacities to avoid illness. Fun and interactive features will include children's microscopes to magnify samples and allow easy viewing for little eyes, along with eye exam charts and iPads with applications for viewing layers of the human body. In one exhibit, children will place their hands on a metal plate and literally hear the rhythm of their heartbeats played on a metal drum.

"Having the support of community leaders like the SCMAA Foundation propels our momentum and helps ground the museum in what makes Sonoma County so special," said Collette Michaud, CEO and founder of the Children's Museum. "We are so grateful for this relationship in helping the museum make an impact on the lives of all children in our community."

The Children's Museum started in 2005 as a mobile "museum on the go." Since then, the mobile museum has served over 14,000 children at 52 schools, many of which have large populations of economically disadvantaged students. The permanent home of the museum is currently under construction adjacent to the Schulz Museum in Santa Rosa. When Phase 1 of the Children's Museum opens to public this spring, it will continue to serve low-income neighborhoods and underserved populations, making the museum a resource for all local families.

Research by the Association of Children's Museums (www.childrensmuseums.org) has shown that access to a children's museum strengthens communities by providing youth with foundational skills that shape their future learning. Through play in informal learning environments, children achieve specific learning objectives primarily because they are excited about what they are learning.

"Being part of this amazing project has made us aware of what a great community we live in," reflected Sue. "The Children's Museum will add to the richness of what we have here."

As a 501(c)(3) charitable organization, the SCMAA Foundation is run exclusively by volunteers. Funds to support creation of the Health & Science Lab will be raised through the Foundation's 23rd annual Garden Tour, scheduled for May 16–17 in Healdsburg. You can contribute to the success of the Garden Tour and the Health & Science Lab by becoming a sponsor today. For more details, visit www.scmaa.org/garden/sponsorship.php. ◇

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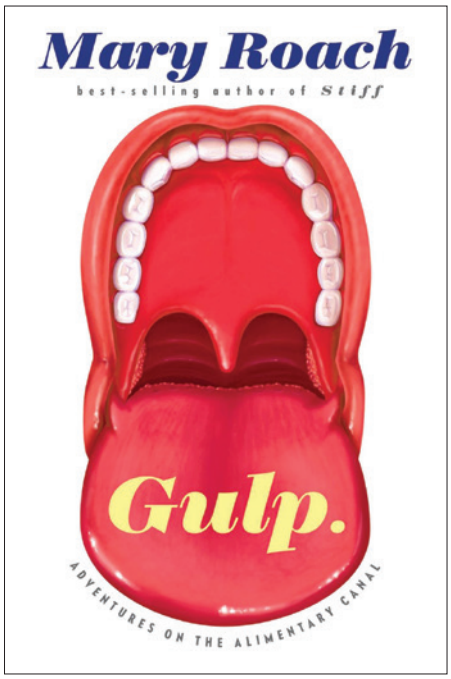
Chewing the Fat

Jeff Sugarman, MD

Gulp: Adventures on the Alimentary Canal, Mary Roach, Norton, 352 pages (2013).



Gulp, the new book by science writer/humorist Mary Roach, offers an entertaining if somewhat meandering and tangential tour of the alimentary canal. From top to bottom Roach takes us to places we never knew existed, and she digs down deeply into the often odd and esoteric research of those committed to exploring where no one has wanted to go before.

Roach reminds us that taste is all about smell, especially if you are a dog. As a dog owner, I found her exposé of the Palatability Assessment Resource Center (PARC), a pet food tasting research center, fun and interesting. She opens a strange and charming window into the life of a professional pet food taster. Who knew that if a pet food manufacturer wants to make a claim that dogs prefer brand X of kibble, the manufacturer must actually get data to support their claims at a lab like PARC?

Roach's exploration of the science of saliva is quite entertaining as well. I was startled at the strangeness of some of the scientific projects she describes. For example, how does salivary breakdown of starch enhance flavor? Subjects in one study had to rate the taste of custard samples. Sounds like a great study to volunteer for, right? What the subjects did not know was that a drop of saliva was secretly added to their meal. Roach does not go into detail as to how the saliva samples were actually obtained.

Dr. Sugarman, a Santa Rosa dermatologist, serves on the SCMA Editorial Board.

The indefatigable Roach amasses so many fun facts that weaving them together into any kind of coherent story at times proves too difficult. The transitions from fact to factoid are often forced and create a zigzagging story line that dilutes from the theme she is attempting to illustrate. Her extensive footnoting, which in places seems to take up nearly as much text as the main body of the book, allows her to weave even more tangents into her story. They are often more entertaining than the stories in the main text.

The historical vignettes that provide the backdrop to our knowledge of certain digestive processes are quite compelling. In pursuing the digestive properties of the stomach, Roach explores the relationship between Alexis St. Martin, a trapper who was accidentally shot, leaving him with a fistula between his stomach and his skin, and William Beaumont, a researcher who experimented on St. Martin for several decades. The reader may forgive Roach for describing their relationship as "acid" because the interplay between these two and the resulting digestion experiments are so entertaining.

Starting with *Moby Dick,* Roach spends many pages on the historical pseudoscientific studies regarding the survivability of being eaten alive. "Would a man in a whale forestomach be crushed or merely tumbled?" she asks. The whole discussion seems ridiculous, but she does include some interesting research, including the work of 18th-century French naturalist Rene Reaumur, who studied raptor gizzard pressures using a small tube carrying meat.

My 15-year-old son would probably enjoy the sections describing the curiosities of the rectum. Here, Roach footnotes the work on gastrointestinal gas by Drs. Terdiman and Fardy. Similarly, the section on flatulence research would provide Daniel Tosh plenty of fuel for his stand-up jokes on "Tosh.0." Of course Roach also can't resist the stories of objects found by emergency department physicians that are stuck or lost in the anus.

Roach is also strangely attracted to macabre events, which she describes and embellishes with pithy details.

In her section on the compliance of the stomach, she describes a woman whose stomach ruptured from overeating and the man who ate 18 pounds of cow brains. There is much to be learned here, although most of it may be utterly useless.

On the back cover, the book carries the label "science," which is true in the loosest sense only. *Gulp* is not a serious book, notwithstanding the extensive referencing. However, how interesting could the alimentary canal really be to the lay reader? Roach cleverly solves this problem with humor, effectively holding our interest in areas that are often off limits. She approaches the very end of the alimentary canal, for example, by relaying interviews with prison inmates about the details of smuggling cell phones in their rectums. I can imagine Roach laughing to herself as she wrote this, and for that matter every page in this book, from the origins of fire-breathing dragons to the Bristol stool chart (complete with diagram). ◇

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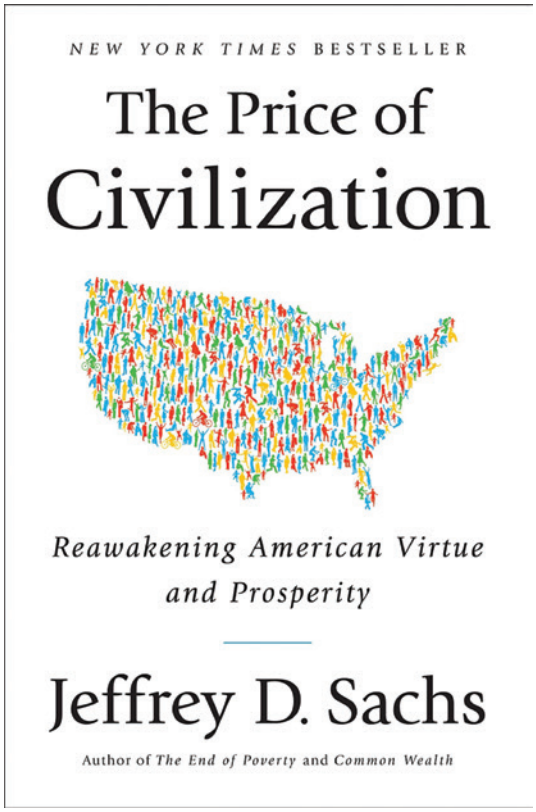
A Prescription for America

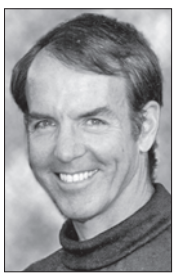
Brien A. Seeley, MD


NEW YORK TIMES BESTSELLER
The Price of Civilization
Reawakening American Virtue and Prosperity
Jeffrey D. Sachs
Author of The End of Poverty and Common Wealth

The Price of Civilization: Reawakening American Virtue and Prosperity, Jeffrey Sachs, 336 pages, Random House (2011).

My college roommates at UC Berkeley in the late 1960s chose political science as their majors while I dutifully pursued the pre-med grind. I remember their excitement at discovering Hegel, Kant and John Stuart Mill while I toiled with organic chemistry and biology. They debated Adam Smith's *The Wealth of Nations* versus Karl Marx's *Das Kapital* while I trusted our elected leaders to rightly navigate between those two extremes. I tiptoed around the Berkeley campus protests about free speech, People's Park, ROTC, Black Panthers and academic freedom while my roommates became "radicalized" in support of them. At one sit-in, two of my roommates were arrested and hauled off to Santa Rita Prison for the night.

When we came home from Berkeley each Thanksgiving, our Greatest Generation parents chided the protests and reminded us that they were the ones who had it tough during the Great Depression and World War II. The major media generally belittled college political demonstrations, and television viewers laughed as Archie Bunker accosted Meathead with slogans such as "better dead than Red" and "pinko commie." My activism only rose to the level of writing and strumming some mild protest songs at the local open-mic coffeehouse, mostly in hopes of meeting girls.



Dr. Seeley, a Santa Rosa ophthalmologist, serves on the SCMA Editorial Board.

But now we Baby Boomers have all grown up. All my roommates got their doctorates, mellowed and moved on, becoming successful family men: one an attorney and two college professors. I became a physician and moved my family to safe suburbia. None of us could have imagined back then that we would end up like this. If we were to all gather for a reunion dinner and let the fur fly talking politics, there is one book that I would want in my back pocket: *The Price of Civilization,* by renowned economist Jeffrey Sachs.

Here is a timely book that makes sense of the five decades since the heady 1960s. It clearly analyzes what drove Reaganomics, globalization, 911, the wars in Iraq and Afghanistan, the Information Age, the 2008 global economic collapse and our dysfunctional Congress. All these, along with the emergence of the Internet, climate change and China as a world power, are woven by Sachs into a coherent framework from which he crafts a new way forward for America.

Sachs credits his physician wife with his clinical approach to diagnosing and treating America's civilization. He begins the book with an astute clinico-pathological correlation and ends it with a prudent long-term treatment program. His application of evidence-based economics results in a distilled revelation of where we have been, where we are and where we must go.

Sachs has impeccable credentials to prescribe such therapy. He is a senior UN advisor as well as a professor of sustainable development and health policy at Columbia University. Prior to his professorship there, he spent decades crafting successful economic recovery policies for several of the world's developing countries in Latin America and Africa.

The backbone of *The Price of Civilization* is Sachs' compendium of statistics and surveys about America's government spending during different eras, along with the measureable effects those choices have had on the American people. This compendium provides a useful, extensible method of economic surveillance for revealing what has really happened in the last five decades. It clarifies the loss of America's manufacturing base and our slide into a service economy in which we stay busy cleaning each other's swimming pools. It explains the gross disproportion of America's wealth and the shocking decline in our world rankings in academic performance. In effect, Sachs is the Edward Snowden of economic policy. The result of his inquiry is a book we all should read with a critical eye. If we cannot refute it, we better get busy and do as it says.

Congressman Paul Ryan perceived *The Price of Civilization* as so threatening to the establishment that he published a lengthy diatribe against it in the *Wall Street Journal* three days before the book was even published.[1] He called the book "a crusade against the free enterprise ethic of our republic."

A quote from Sachs' text underlines his assessment of our problems:

> The role of big money in politics has completely sidelined competent public administration. . . . The list of recent government failures is long and growing. The intelligence agencies failed to anticipate 911. The Bush Administration launched a war over Iraqi weapons of mass destruction that did not exist. The Iraq and Afghan occupations were totally botched, brought down by ignorance, lack of planning, and corruption of U.S. contractors. Hurricane Katrina shattered our confidence in our emergency response system. The banking crisis shattered our confidence in financial regulation. The banking bailout destroyed any remaining sense of fairness between Wall Street and Main Street. And now we face budget deficits unprecedented since World War II, but continue to grant tax breaks to the richest Americans.

Though he cites many background causes for these failures, Sachs points to the Supreme Court's 2010 Citizens United decision—which upheld the right of big corporations, billionaires and special-interest lobbies to give unlimited campaign contributions to politicians—as a particularly egregious mistake. This decision, says Sachs, cements the power of the heartless "corporatocracy" that rules America.

After his holistic diagnosis of America's woes and their causes, Sachs propounds a detailed cure. His gifts as both technical analyst and vivid communicator succeed in enticing the reader to wade into his careful prescription for rebalancing spending and taxation. Sachs gets quite specific here, assigning each category of spending and taxation a relative scale according to its percentage of gross domestic product. He substantiates his choice for where we should draw the line between capitalism and socialism with what seems unassailable authority.

Sachs' prescription evokes admiration for its thoroughness, its thoughtful targeting of the worst ills, and its innovations. The prescription exhibits a clear self-awareness that well-intentioned policymaking can be like squeezing mercury, and it presents strategies to prevent that. One gets the impression that his recipe has already succeeded in other countries. It would serve well as the manifesto for the new, third political party that Sachs suggests could emerge from America's Millennial generation. Sachs' advice is caring and fatherly, and it conveys wisdom, clarity and a call for long-term planning (instead of crisis management) that is urgently needed.

Sachs recognizes that a nation's common wealth extends beyond its oceans, air, rivers and forests, to include human capital: our collective capacities for achievement, innovation and productivity. He generates compelling arguments that, in order to remain strong and prosperous in the global sense, Americans must share the responsibility to relaunch numerous civil initiatives that bolster our human capital. This view reminds me of my parents' reply when I offered to repay them for my medical education: "Our repayment will be that you just do the same for your children." Such a pay-it-forward ethic is the real heart of Sachs' message in *The Price of Civilization*.

It is altogether fitting that Sachs chooses this lofty conclusion to his important book:

> We are, in the end, stewards of the future at a time when our shared future is imperiled by economic divisions, shortsightedness, and a growing ecological crisis. We have great tasks ahead, to redeem once again the American trust in democracy and equality. We have a high responsibility to our children and other generations that will come. Let us begin anew. ◇

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Reference

1. Ryan P, "America's enduring ideal," *Wall Street Journal* (Oct. 1, 2011).

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What the ACA Means for Physicians

Stephen Steady, MD

The United States has more than 850,000 practicing physicians, all of whom play a critical role in patient care. Statements by these physicians about the Affordable Care Act will affect public opinion as the law is implemented. The ACA will cost more than $800 billion, which will mostly come from new taxes and reductions in Medicare.

Reimbursement for physicians is a top concern as the ACA unfolds. Much of the concern revolves around Medicare's sustainable growth rate (SGR) formula, which could cut reimbursements by about 24% in 2014. Fortunately, both the Senate Finance Committee and the House Ways and Means Committee approved legislation in early December repealing the SGR. The legislation is still awaiting final approval as this is written, but if it does pass, it will probably include several Medicare reforms, including automatic payment updates, incentives to participate in new payment models, and retention of a fee-for-service program.

The ACA will also cover 16 million people through Medicaid, which pays physicians approximately 56% of private insurance rates. These reduced rates may impact patients trying to find a physician.

Physicians are also concerned that government officials may interfere with medical decision-making under the ACA. Establishment of strict practice guidelines may not permit physicians to make decisions interactively with patients. The ACA also has provisions to bring committee-based medicine to reality. The Independent Payment Advisory Board (IPAB), selected by the President and confirmed by the Senate, will be charged with controlling Medicare spending by making practice and payment decisions. Since Congress has no oversight on these decisions, the IPAB will have unprecedented ability to change healthcare resources if Medicare spending exceeds inflation. IPAB recommendations are beyond congressional reach unless overturned by a supermajority.

Likewise, comparative effectiveness research, which tries to identify the least costly alternative (LCA), could impact the practice of medicine. The LCA is presently limited by the courts, but the Medicare Payment Advisory Commission (yet another government entity, distinct from the IPAB) will look at the LCA to control costs and potentially could limit physician decision-making and access to newer technologies.

Under the ACA, bundling payments by creating accountable care organizations (ACOs) is one way to control costs. Groups that have decided to participate in ACOs note that start-up costs to administer the ACO may erode the potential savings. Furthermore, they report little change in how they deliver care.

Another concern for physicians is the Center for Medicare and Medicaid Innovation. According to a report by senators Tom Coburn (R-Okla.) and John Barrasso (R-Wyo.), both of whom are physicians, the legislation authorizing the innovation center not only gives the Health and Human Services secretary and the Medicare administrator the ability to experiment with new payment and delivery systems, but also the authority to impose the results without checks. There is no reference to external checks in the law, according to the senators' report, and physicians have no legal recourse to contest the use of new payment models.

Physicians will have to adjust to the ACA. Solo practitioners may be hard to find, or at least one who will take your insurance. A growing number of physicians may only take cash. The ACA has also increased the complexity of practice, with more legal compliance responsibilities driving up the cost of maintaining a practice. Unfortunately, decreased reimbursement rates will make it more difficult to see an increasing number of patients. Physicians are now joining larger groups, particularly hospital foundation models, to overcome these burdens.

The ACA has wide implications in the coming years for the supply of physicians, the structure of medical practice, and physician decision-making. The perception and reality of these changes will determine how physicians practice in the future. Many of these changes appear to be so unpredictable that some physicians may lose the incentive to be creative, and many talented individuals may not even take up the profession of medicine. Can government official and healthcare administrators make changes and adjustments in a timely manner to counter expected consequences? Only time will tell us the answer. ◇

Dr. Steady, a Petaluma gastroenterologist, is president of SCMA.

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